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NATIONAL MARINE FISHERIES SERVICE

# GRANT-IN-AID FOR FISHERIES Program Activities

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

Front Cover: A picture from the past -- a little girl examines a Coos Bay, Oregon Striped Bass. Photo by Magill, NMFS.

U.S. DEPARTMENT OF COMMERCE

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
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# GRANT-IN-AID FOR FISHERIES PROGRAM ACTIVITIES 1983

Prepared by
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Washington, D.C.
July 1984

# AUTHORIZATION

This report is submitted in compliance with the requirement of Section 9(a) of the Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742d(7) and Section 2 of the Anadromous Fish Conservation Act of 1965, as amended, 16 U.S.C. 757b.

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# GRANT-IN-AID FOR FISHERIES PROGRAM ACTIVITIES, 1983

by

Grant-in-Aid Staff

## INTRODUCTION

This is the 16th in a series of annual publications on program activities under the Grant-in-Aid for Fisheries Program of the Office of Fisheries Management, National Marine Fisheries Service (NMFS).

Information presented in this report provides State program coordinators and administrators, Federal personnel, project personnel, and others concerned with research, development, conservation, and management of our fishery resources with a convenient reference to the grant-in-aid program. This publication will also facilitate planning, coordination, and integration of State, Federal, and private sector activities concerned with the fishery resources.

## THE ACTS

The NMFS Grant-in-Aid Program is authorized under two Acts:

1. The Commercial Fisheries Research and Development Act of 1964 (Public Law 88-309 as amended) - Authorizes the Secretary of Commerce to cooperate with the 50 States, the Commonwealths of Puerto Rico and the Northern Mariana Islands, and the Governments of the Virgin Islands, Guam, American Samoa, and the Trust Territory of the Pacific Islands, in carrying out research and development of the Nation's commercial fisheries. Projects eligible for funding include research, development, construction, and coordination. Cost-sharing projects under subsection 4(a) are funded up to the 75 percent level of Federal participation, whereas projects under subsection 4(b), to alleviate resource disasters, may be financed 100 percent with Federal funds. This Act would have expired June 1973; however, it was extended by Public Laws 92-590, 95-53, 96-62 and 97-389 for an additional 12 years, or to September 30, 1985. The authorized levels are $5 million for subsection 4(a), and $2.5 million for subsection 4(b).

2. The Anadromous Fish Conservation Act of 1965 (Public Law 89-304, as amended) - Authorizes the Secretary of Commerce and the Secretary of Interior to enter into cooperative agreements with States and other non-Federal interests for the conservation, development, and enhancement of the anadromous fishery resources of the Nation and the fish in the Great Lakes and Lake Champlain that ascend streams to spawn, and for the control of the sea lamprey. The program is administered at the Federal level jointly by the National Marine Fisheries Service and the U.S. Fish and Wildlife Service. Federal funds up to 50 percent, 66 2/3 percent when two or more States cooperate, or 90% to carry out projects required by interstate fishery management plans, may be used to finance project costs. State fishery agencies, colleges, universities, private companies, and other non-Federal interests in 31 States bordering the oceans and the Great Lakes may participate under the Act. All projects must be coordinated with the State fishery agency concerned. The authorization for this Act was renewed in January 1983 by Public Law 97-453. This Act set authorized levels at $7.5 million for fiscal years 1983, 1984, and 1985 for grants under Section 4, and reauthorized Section 7, the emergency research program to study striped bass populations and to identify factors responsible for the current decline, for fiscal years 1983 and 1984 at $1 million each year.

# APPORTIONMENT OF FEDERAL FUNDS BY STATE AND AUTHORIZATION

Distribution of Federal funds to the States and others under the National Marine Fisheries Service grant-in-aid for fisheries program (Public Law 88-309 and Public Law 89-304) in Fiscal Year 1983, is given in the following tabulation:

| State and Others | FY 1983 P.L 88-309 | P.L 89-304 |
|---|---|---|
| Alabama | $ 119,700 | $ 91,400 |
| Alaska | 240,000 | 502,850 |
| Arizona | 20,000 | |
| Arkansas | 25,000 | |
| California | 240,000 | 362,000 |
| Colorado | 20,000 | |
| Connecticut | 20,000 | 42,000 |
| Delaware | 29,400 | |
| Florida | 240,000 | |
| Georgia | 66,700 | |
| Hawaii | 34,200 | |
| Idaho | 20,000 | |
| Illinois | 20,000 | |
| Indiana | 20,000 | |
| Iowa | 20,000 | |
| Kansas | 20,000 | |
| Kentucky | 20,000 | |
| Louisiana | 240,000 | |
| Maine | 184,100 | 70,380 |
| Maryland | 114,300 | 94,620 |
| Massachusetts | 240,000 | 60,000 |
| Michigan | 20,000 | |
| Minnesota | 20,000 | |
| Mississippi | 164,900 | 36,000 |
| Missouri | 20,000 | |
| Montana | 20,000 | |
| Nebraska | 20,000 | |
| Nevada | 20,000 | |
| New Hampshire | 37,100 | 90,000 |
| New Jersey | 104,600 | 20,000 |
| New Mexico | 20,000 | |
| New York | 92,200 | 82,700 |
| North Carolina | 74,100 | 64,000 |
| North Dakota | 20,000 | |
| Ohio | 54,300 | |
| Oklahoma | 20,000 | |
| Oregon | 105,100 | 593,184 |
| Pennsylvania | 71,800 | |
| Rhode Island | 33,300 | 20,000 |
| South Carolina | 25,300 | 45,500 |
| South Dakota | 20,000 | |
| Tennessee | 20,000 | |
| Texas | 240,000 | |
| Utah | 20,000 | |
| Vermont | 20,000 | |
| Virginia | 146,600 | 152,000 |
| Washington | 129,800 | 523,000 |
| West Virginia | 20,000 | |
| Wisconsin | 20,000 | 35,000 |
| Wyoming | 20,000 | |
| American Samoa | 127,500 | |
| Guam | 20,000 | |
| Puerto Rico | 240,000 | |
| Virgin Islands | 20,000 | |
| Trust Territory of the Pacific Islands | 20,000 | |
| Northern Mariana Islands | 20,000 | |
| Pacific Marine Fisheries Commission | - | 65,366 |
| NW Indian Tribes | - | |
| Atlantic States Marine Fisheries Commission | - | 10,000 |
| NMFS Northeast Center | - | 40,000 |
| TOTAL | $4,000,000 | $3,000,000* |

*Includes Emergency Striped Bass Study Projects

# CLASSIFICATION OF FEDERAL AND STATE FUNDS BY ACTIVITY AND AUTHORIZATION

## FISCAL YEAR 1983

Program activities cover various fields, including broad categories of research and development of commercial fisheries and conservation, development and enhancement of anadromous fishery resources. Seventy-eight percent of the funds were used for research in such areas as the environment, freshwater finfish, marine finfish, and shellfish; 6.7 percent for collection of statistics; 5.6 percent for extension service; 5.2 percent for construction; and less than 5 percent for each of the other program activities. Funding figures shown include both State and Federal dollars for all 1983 project segments.

| Activity | Public Laws | | Total | |
|---|---|---|---|---|
| | 88-309 ($1,000) | 89-304 ($1,000) | Dollars ($1,000) | Percent (Total) |
| Aquaculture | 206 | - | 206 | 1.7 |
| Construction | - | 634 | 634 | 5.2 |
| Fish screens and stream improvement facilities | - | 80 | 80 | |
| Hatcheries and hatchery facilities | - | 554 | 554 | |
| Laboratories | - | - | - | |
| Vessel | - | - | - | |
| Coordination | 43 | - | 43 | .4 |
| Disease and parasite control | 92 | - | 92 | .7 |
| Extension service | 692 | - | 692 | 5.6 |
| Market development | - | - | - | |
| Operation and maintenance | - | 180 | 180 | 1.4 |
| Planning | - | - | - | |
| Research | 3,864 | 5,625 | 9,489 | 78.0 |
| Environment | 90 | - | 90 | |
| Finfish (Freshwater) | 940 | 70 | 1,010 | |
| Finfish (Marine or Anadromous) | 1,677 | 5,463 | 7,140 | |
| Shellfish | 1,157 | 92 | 1,249 | |
| Statistics | 871 | - | 871 | 7.0 |
| TOTAL | 5,768 | 6,439 | 12,207 | 100.0 |

# PROJECT TITLES BY STATE AND PUBLIC LAW WITH OTHER PERTINENT INFORMATION

## FISCAL YEAR 1983

All 50 states, the Commonwealths of Puerto Rico and the Northern Mariana Islands, the Governments of American Samoa, Guam, the Virgin Islands, and the Trust Territory of the Pacific Islands, and certain Northwest Indian tribes are participating in the program under one or both authorizations. In FY 1983, 44 projects were completed at an estimated total cost (State and Federal dollars combined) of $8,260,000; 133 projects were initiated or are continuing at an estimated cost of $46,613,000. The average Federal share of the Public Law 88-309 projects is 67 percent; the average Federal share of the Public Law 89-304 projects is 53 percent.

Tabulation of completed and continuing projects including total cost follows:

| | Completed Projects | | Continued Projects | | Total Projects | |
|---|---|---|---|---|---|---|
| Public Law | Number | Total Cost | Number | Total Cost | Number | Total Cost |
| | | $1,000 | | $1,000 | | $1,000 |
| 88-309 | 21 | 3,746 | 95 | 22,921 | 116 | 26,667 |
| 89-304 | 23 | 4,514 | 38 | 23,692 | 61 | 28,206 |
| TOTAL | 44 | 8,260 | 133 | 46,613 | 177 | 54,873 |

A list of continuing projects and those completed in 1983, under each authorization by State, including duration, date completed, and page reference for project narrative, is tabulated on pages 5 through 18. Under Public Law 88-309, project numbers identify the Region administering the project by the first digit, project number sequence within the Region by next digit(s), followed by a letter to denote activity as R-research, C-construction, D-development, and S-coordination. Under Public Law 89-304, the first two letters, "AF" identify the project as anadromous fish, with next letter "C" for projects administered by NMFS, or jointly funded projects with U.S. Fish and Wildlife Service (FWS) with NMFS as lead agency, and "CS" for jointly funded projects with FWS as lead agency, followed by a number sequence within each State.

| Public Law | Project number and title | | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | ALABAMA | | | | | | |
| 88-309 | 2-391-R | Research and management of Alabama coastal fisheries | 1982 | 3 | F-462,000<br>S-154,000 | | 32 |
| 89-304 | AFCS-12 | Striped bass production and stocking experiments in Alabama coastal areas (Study No. 2) | 1979 | 3 | F-201,086<br>S-201,086<br>(Includes FWS share) | 1983 | 30 |
| | AFC-13 | Increasing yield of striped bass fingerlings through intensive culturing methods | 1979 | 3 | F- 54,600<br>S- 54,600 | 1983 | 30 |
| | AFC-21 | Improving yield of striped bass fingerlings through improved nutrition | 1983 | 3 | F- 49,950<br>S- 49,950 | | 31 |
| | AFCS-23 | Alabama and Mississippi cooperative striped bass restoration program | 1983 | 3 | F-231,000<br>S-115,500<br>(Includes FWS share) | | 31 |
| | ALASKA | | | | | | |
| 88-309 | 5-49-R | Gulf of Alaska - Bering Sea groundfish investigations | 1981 | 3 | F- 172,100<br>S- 178,600 | | 28 |
| | 5-50-R | Stock assessment of Pacific herring, Bristol Bay, Alaska | 1982 | 5 | F-560,000<br>S-202,500 | | 28 |
| | 5-51-R | Pacific herring research - S.E. Alaska | 1982 | 5 | F-280,000<br>S-100,000 | | 28 |
| 89-304 | AFC-65 | Chignik sockeye studies | 1981 | 3 | F -84,100<br>S -108,600 | | 28 |
| | AFC-67 | Microwire tagging of wild coho salmon stocks | 1981 | 5 | F-530,000<br>S-452,300 | | 28 |
| | AFC-70 | Southeastern Alaska sockeye salmon stock apportionment studies | 1982 | 5 | F-330,000<br>S-347,100 | | 29 |
| | AFC-71 | Southeastern Alaska pink and chum studies | 1982 | 5 | F-627,900<br>S-824,700 | | 29 |
| | AFC-72 | Southeastern Alaska port sampling | 1982 | 5 | F- 652,200<br>S-1,300,000 | | 29 |

| Public Law | Project number | Project title | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | AMERICAN SAMOA | | | | | | |
| 88-309 | 4-46-D | Fisheries technical assistance | 1979 | 3 | F-227,121<br>S- 0 | 1983 | 21 |
| | 4-63-D | Export Fish Marketing | 1983 | 1 | F-25,500<br>S- 0 | | 22 |
| | 4-65-D | PVC Pipes Bottomfish Longlining | 1983 | 1 | F- 29,400<br>S- 0 | | 33 |
| | ARIZONA | | | | | | |
| 88-309 | 4-56-D | Distribution and relative abundance of freshwater clams | 1982 | 2 | F- 65,505<br>S- 21,835 | | 35 |
| | ARKANSAS | | | | | | |
| 88-309 | 2-371-R | Commercial fishery survey | 1980 | 3 | F-165,348<br>S- 55,116 | | 25 |
| | CALIFORNIA | | | | | | |
| 88-309 | 4-59-D | Fisheries monitoring and assessment program | 1982 | 3 | F-340,035<br>S-113,346 | | 33 |
| | 4-62-D | Southern California Commercial Fisheries Assessment | 1983 | 3 | F-284,180<br>S- 94,727 | | 33 |
| 89-304 | AFC-16 | Salmon and steelhead research, management and enhancement | 1981 | 3 | F-1,134,305<br>S-1,134,305 | | 29 |
| | COLORADO | | | | | | |
| 88-309 | 1-161-R | Baitfishes of Colorado | 1981 | 3 | F- 9,828<br>S- 3,276 | | 24 |
| | 1-169-R | Warmwater fish culture | 1983 | 3 | F-105,000<br>S- 35,000 | | 19 |
| | CONNECTICUT | | | | | | |
| 88-309 | 3-374-R | Connecticut lobster investigations | 1982 | 5 | F- 82,625<br>S- 82,625 | | 35 |
| 89-304 | AFC-13 | Population dynamics of American shad in the Connecticut River | 1981 | 4 | F- 78,000<br>S- 78,000 | | 27 |
| | AFC-14 | Kensington Atlantic salmon hatchery modernization | 1982 | 1 | F- 21,600<br>S- 21,600 | 1983 | 20 |

| Public Law | Project number and title | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|
| | | Year | Years | Dollars | Year | Page |
| | DELAWARE | | | | | |
| 88-309 | 3-358-D Technical assistance to commercial fisheries | 1982 | 3 | F-183,400<br>S- 61,134 | | 21 |
| | FLORIDA | | | | | |
| 88-309 | 2-336-D Fisheries extension and marketing services program | 1978 | 5 | F-879,732<br>S-293,245 | | 21 |
| | 2-341-R Florida's marine resources research, development, and management program | 1978 | 5 | F-635,200<br>S-211,733 | | 33 |
| | 2-370-D Oyster cultivation by reef construction | 1980 | 3 | F- 92,125<br>S- 30,708 | | 36 |
| | 2-405-D Fisheries extension and marketing services program | 1983 | 3 | F-700,000<br>S-233,333 | | 21 |
| | 2-407-D Oyster cultivation by reef contruction and oyster transplanting program | 1983 | 3 | F-100,000<br>S- 33,333 | | 36 |
| | 2-408-R Florida's marine resources, research, development and management program | 1983 | 5 | F-500,000<br>S-166,666 | | 33 |
| | GEORGIA | | | | | |
| 88-309 | 2-379-R Studies and assessment of Georgia's marine fisheries resources | 1981 | 1 | F- 77,700<br>S- 25,900 | 1983 | 36 |
| | 2-390-R Studies and assessment of Georgia's marine fisheries resources | 1983 | 2 | F-235,125<br>S- 78,375 | | 36 |
| 89-304 | AFC-18 Georgia commercial shad assessment | 1980 | 2 | F- 45,161<br>S- 45,161 | 1983 | 27 |
| | GUAM | | | | | |
| 88-309 | 4-58-D Development of polyculture fish farming | 1982 | 3 | F- 60,000<br>S-147,000 | | 19 |
| | HAWAII | | | | | |
| 88-309 | 4-57-D Seaweed investigations | 1982 | 3 | F-135,000<br>S- 45,000 | | 19 |
| | 4-64-D Commercial Fisheries Statistics | 1983 | 1 | F- 31,000<br>S- 31,000 | | 38 |

| Public Law | Project number and title | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|
| | | Year | Years | Dollars | Year | Page |
| | IDAHO | | | | | |
| 88-309 | 1-171-R Proliferative kidney disease in rainbow trout | 1983 | 2 | F- 58,747<br>S- 19,583 | | 20 |
| | ILLINOIS | | | | | |
| 88-309 | 3-327-R Effects of three commercial harvesting methods on mussel beds | 1979 | 4 | F- 85,865<br>S- 29,419 | 1983 | 35 |
| | 3-373-R Effects of fleeting areas on mussel beds | 1982 | 2 | F- 20,000<br>S- 6,616 | | 35 |
| | 3-383-R Age structure and analysis of carp populations in the Mississippi and Illinois Rivers | 1983 | 2 | F-10,000<br>S- 3,334 | | 24 |
| | INDIANA | | | | | |
| 88-309 | 3-336-R Movements of yellow perch in Indiana waters of Lake Michigan | 1980 | 3 | F- 75,000<br>S- 74,728 | 1983 | 24 |
| | 3-387-R Selected characteristics of the yellow perch stock in Indiana waters of Lake Michigan | 1983 | 3 | F- 61,141<br>S- 63,838 | | 25 |
| | IOWA | | | | | |
| 88-309 | 2-384-R Habitat associations and movements of shovelnose sturgeon with reference to spawning | 1982 | 1 | F- 20,000<br>S- 6,667 | | 25 |
| | 2-399-R Spawning and early life history of shovelnose sturgeon | 1983 | 1 | F- 20,000<br>S- 6,667 | | 25 |
| | KANSAS | | | | | |
| 88-309 | 2-389-R Kansas commercial fisheries statistics | 1982 | 1 | F- 20,000<br>S- 6,667 | | 38 |
| | 2-401-R Kansas marketable fisheries investigation | 1983 | 3 | F- 60,000<br>S- 20,000 | | 38 |
| | KENTUCKY | | | | | |
| 88-309 | 2-388-R Population dynamics and biology of the paddlefish Polydon spathula in Lake Cumberland, KY | 1982 | 2 | F- 45,000<br>S- 15,000 | | 25 |

| Public Law | Project number and title | | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | LOUISIANA | | | | | | |
| 88-309 | 2-381-R | Monitoring and assessment activities in Louisiana's coastal waters | 1982 | 1 | F-183,000<br>S- 61,000 | 1983 | 36 |
| | 2-394-R | Research, development and management of Louisiana's coastal fisheries | 1982 | 5 | F- 1,200,000<br>S- 400,000 | | 25 |
| | MAINE | | | | | | |
| 88-309 | 3-359-S | Coordination of research and development | 1982 | 3 | F-135,146<br>S- 45,049 | | 20 |
| | 3-368-D | Fisheries technology service | 1982 | 3 | F-104,887<br>S-104,887 | | 21 |
| | 3-370-R | Lobster stock assessment | 1982 | 3 | F-258,026<br>S-258,026 | | 35 |
| | 3-378-R | Early life histories of commercial shrimp and fish | 1983 | 3 | F- 169,994<br>S- 169,994 | | 33 |
| | 3-389-R | Brit herring tagging studies | 1983 | 1 | F- 6,865<br>S- 6,866 | | 28 |
| | 3-390-D | Environmental monitoring system renovation | 1983 | 1 | F- 21,150<br>S- 21,150 | | 23 |
| 89-304 | AFC-21 | Population biology and management of the alewife (Alosa pseudoharengus) in Maine | 1979 | 4 | F- 82,740<br>S- 82,740 | 1983 | 27 |
| | AFC-23 | Kennebec River anadromous stock evaluation | 1982 | 3 | F- 34,100<br>S- 34,100 | | 27 |
| | AFC-24 | Androscoggin River shad restoration, Maine | 1982 | 3 | F-181,024<br>S-181,024 | | 27 |
| | AFC-25 | Population biology of the alewife | 1983 | 3 | F- 44,478<br>S- 44,479 | | 27 |
| | MARYLAND | | | | | | |
| 88-309 | 3-345-D | Maryland fisheries statistics | 1980 | 5 | F-554,217<br>S-554,217 | | 38 |
| | 3-365-D | Fisheries technology and advisory services | 1982 | 1 | F- 47,925<br>S- 15,975 | 1983 | 21 |
| | 3-366-D | Fish environmental assessment | 1982 | 1 | F- 61,143<br>S- 20,382 | 1983 | 20 |

| Public Law | Project number | Project title | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | 3-367-R | Monitoring & research of lethal oyster diseases in Chesapeake Bay | 1983 | 1 | F- 41,000<br>S- 41,000 | | 36 |
| 89-304 | AFC-10 | Survey and inventory of anadromous fish spawning areas | 1980 | 3 | F-204,900<br>S-204,900 | 1983 | 33 |
| | AFC-11 | Striped bass research, Maryland (Emergency Striped Bass Research Study) | 1980 | 4 | F-246,615<br>S-124,036 | | 31 |
| | AFC-13 | Striped bass fishery enhancement investigations | 1982 | 1 | F- 24,696<br>S- 24,696 | 1983 | 31 |
| | AFC-14 | Anadromous fish research, Maryland | 1983 | 3 | F- 223,860<br>S- 223,860 | | 33 |
| | MASSACHUSETTS | | | | | | |
| 88-309 | 3-218-C | Construction of marine research station | 1974 | 10 | F-250,000<br>S-250,000 | | 20 |
| | 3-287-R | Coastwide fishery resource assessment | 1978 | 5 | F-507,750<br>S-169,250 | 1983 | 34 |
| | 3-363-D | Commercial fisheries development program | 1982 | 3 | F-275,764<br>S- 91,921 | | 21 |
| | 3-371-D | Collection, compilation, evaluation, and dissemination of Massachusetts fishery statistics | 1982 | 3 | F-232,832<br>S-155,221 | | 38 |
| | 3-375-R | Massachusetts fishery resource assessment | 1983 | 3 | F- 197,550<br>S- 197,550 | | 34 |
| 89-304 | AFC-18 | Characterization of Massachusetts striped bass landings (Emergency Striped Bass Research Study) | 1981 | 3 | F- 51,281<br>S- 25,641 | | 31 |
| | AFC-19 | Anadromous fisheries management | 1981 | 5 | F-349,600<br>S-349,600 | | 19 |
| | MICHIGAN | | | | | | |
| 88-309 | 3-384-R | Assessment of whitefish populations in the treaty area of Lake Michigan | 1983 | 4 | F- 82,000<br>S- 34,000 | | 24 |

| Public Law | Project number and title | | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | AFC-14 | Lake Erie walleye assessment | 1980 | 3 | F-147,122<br>S-147,122 | 1983 | 24 |
| | MINNESOTA | | | | | | |
| 88-309 | 3-344-R | Lake Superior commercial fisheries assessment studies | 1981 | 4 | F- 51,300<br>S- 17,100 | | 25 |
| | MISSISSIPPI | | | | | | |
| 88-309 | 2-376-R | Experimental treatment of catfish ponds with algal inhibitors | 1981 | 3 | F-129,422<br>S- 43,141 | | 19 |
| | 2-393-R | Coastal fisheries monitoring and assessment - Mississippi coast | 1982 | 4 | F-420,000<br>S-140,000 | | 37 |
| 89-304 | AFCS-7 | Striped bass restoration program-Mississippi Gulf Coast | 1979 | 4 | F-161,000<br>S-161,000<br>(includes FWS share) | 1983 | 31 |
| | AFCS-24 | Mississippi and Alabama cooperative striped bass restoration program | 1983 | 3 | F-183,000<br>S- 91,503<br>(includes FWS share) | | 37 |
| | MISSOURI | | | | | | |
| 88-309 | 2-363-R | Research and management of Missouri's commercial fisheries resources | 1979 | 5 | F-124,875<br>S- 41,625 | | 38 |
| | MONTANA | | | | | | |
| 88-309 | 1-162-R | Development and management of commercial fishing practices | 1982 | 5 | F-100,000<br>S- 31,664 | | 25 |
| | NEBRASKA | | | | | | |
| 88-309 | 2-359-R | Population estimates of Missouri River fishes | 1979 | 5 | F- 82,575<br>S- 27,525 | | 38 |
| | 2-360-R | Inland commercial fisheries investigations | 1979 | 5 | F- 51,825<br>S- 17,275 | | 38 |
| | 2-402-R | Nebraska commercial fishery investigations | 1983 | 3 | F-112,382<br>S- 37,461 | | 23 |
| | NEVADA | | | | | | |
| 88-309 | 4-60-R | Production of sterile grass carp | 1982 | 2 | F- 36,794<br>S- 12,265 | | 19 |

| Public Law | Project number and title | | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | NEW HAMPSHIRE | | | | | | |
| 88-309 | 3-343-D | Statistical data acquisition program for the marine fisheries of New Hampshire | 1980 | 3 | F- 77,250<br>S- 25,750 | 1983 | 38 |
| | 3-351-R | A comprehensive marine resources strategy | 1981 | 2 | F- 59,821<br>S- 19,940 | 1983 | 22 |
| | 3-381-D | Statistical data acquisition program for the marine fisheries of New Hampshire | 1983 | 3 | F- 72,000<br>S- 24,000 | | 38 |
| 89-304 | AFC-5 | Operation and maintenance of the Milford hatchery | 1980 | 3 | F-240,000<br>S-240,000 | 1983 | 22 |
| | AFC-6 | Operation and maintenance of the Milford Hatchery | 1983 | 3 | F-300,000<br>S-300,000 | | 22 |
| | NEW JERSEY | | | | | | |
| 88-309 | 3-332-R | Inventory of New Jersey's estuarine shellfish resource | 1979 | 5 | F-192,072<br>S-192,072 | | 37 |
| | 3-340-D | Marine fisherman's coordination project | 1980 | 3 | F-112,500<br>S- 37,500 | 1983 | 22 |
| | 3-364-R | MSX disease and oyster production in Delaware Bay | 1982 | 3 | F- 72,000<br>S- 24,000 | | 20 |
| | 3-367-R | Life history investigations of marine fisheries | 1982 | 3 | F-71,888<br>S-26,962 | | 34 |
| | 3-388-D | Marine fishermen's coordination project | 1983 | 3 | F-106,875<br>S- 35,625 | | 22 |
| 89-304 | AFC-5 | Monitoring of the status of striped bass population in New Jersey (Emergency Striped Bass Research Study) | 1982 | 1 | F- 34,000<br>S- 17,000 | 1983 | 31 |
| | AFC-6 | Monitoring of the status of the striped bass in New Jersey (Emergency Striped Bass Research Study) | 1983 | 1 | F- 20,000<br>S- 10,000 | | 31 |

| Public Law | Project number and title | | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | NEW MEXICO | | | | | | |
| 88-309 | 2-366-R | Intensive harvest of commercial species | 1980 | 4 | F-111,000<br>S- 37,000 | | 26 |
| | NEW YORK | | | | | | |
| 88-309 | 3-346-S | Coordination III | 1981 | 3 | F- 60,200<br>S- 68,800 | | 20 |
| | 3-347-C | Marine research vessel acquisition | 1981 | 2 | F- 44,000<br>S- 44,000 | 1983 | 20 |
| | 3-355-D | Shellfish resource promotion | 1982 | 3 | F-156,000<br>S-156,000 | | 37 |
| | 3-356-R | Assessment of New York's shellfish resources II | 1982 | 3 | F-169,750<br>S-169,750 | | 37 |
| | 3-357-R | Investigation of the American lobster in eastern Long Island Sound | 1982 | 2 | F- 16,465<br>S- 16,465 | | 35 |
| | 3-360-D | Shellfish sanitation control utilizing mobile laboratories III | 1982 | 3 | F- 65,570<br>S- 65,570 | | 37 |
| 89-304 | AFC-11 | Biology and management of striped bass in New York waters (Emergency Striped Bass Research Study) | 1980 | 4 | F-250,357<br>S-126,561 | | 31 |
| | AFC-12 | A study of the striped bass in the marine district of New York IV | 1982 | 3 | F-176,340<br>S-176,340 | | 32 |
| | NORTH CAROLINA | | | | | | |
| 88-309 | 2-386-R | Assessment of North Carolina commercial finfisheries: Project I | 1982 | 3 | F-224,000<br>S- 74,667 | | 34 |
| 89-304 | AFCS-16 | North Carolina anadromous fisheries management program | 1979 | 3 | F-362,650<br>S-362,650<br>(Includes FWS share) | | 34 |
| | AFC-18 | An investigation of size, age and sex of North Carolina striped bass (Emergency Striped Bass Research Study) | 1980 | 4 | F-103,334<br>S- 51,666 | | 32 |

| Public Law | Project number | Project title | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | AFC-19 | Roanoke River striped bass investigation | 1982 | 2 | F- 34,000<br>S- 34,000 | | 32 |
| | AFC-22 | North Carolina andromous fishery management program | 1983 | 2 | F-80,000<br>S-80,000 | | 32 |
| | NORTH DAKOTA | | | | | | |
| 88-309 | 1-146-R | The biology of Diplostomum spathaceum (eye flukes) and its relationship to fish of commercial value | 1979 | 4 | F- 30,000<br>S- 10,000 | | 21 |
| | NORTHERN MARIANAS | | | | | | |
| 88-309 | 4-61-D | Fisheries data collection program | 1982 | 1 | F- 42,000<br>S- 6,500 | 1983 | 39 |
| | 4-66-D | Fishery Data Collection II | 1983 | 1 | F-34,000<br>S- 5,790 | | 39 |
| | OHIO | | | | | | |
| 88-309 | 3-301-R | Commercial fishing gear mortality | 1978 | 6 | F-171,765<br>S- 75,835 | | 26 |
| | 3-379-R | Ecology of yellow perch in Lake Erie | 1983 | 3 | F-192,000<br>S- 64,000 | | 25 |
| | OKLAHOMA | | | | | | |
| 88-309 | 2-396-R<br>2-397-R<br>2-398-R | Oklahoma commercial fisheries project (combined) | 1983 | 1 | F- 22,037<br>S- 7,346 | | 26 |
| | OREGON | | | | | | |
| 88-309 | 1-151-R | Groundfish and shrimp assessment | 1979 | 3 | F-443,956<br>S-147,984 | 1983 | 34 |
| 88-304 | AFC-98 | Infectious disease program for salmon and steelhead hatcheries | 1980 | 3 | F-133,498<br>S-133,498 | 1983 | 21 |
| | AFC-102 | Research and development of Oregon's coastal fish stocks | 1980 | 4 | F-957,607<br>S-957,607 | | 29 |
| | AFC-111 | Regional Mark Processing Center | 1981 | 2 | F-165,000<br>S- 82,500 | | 29 |

| Public Law | Project number and title | | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | AFC-112 | Stock assessment and genetic studies of anadromous fish | 1981 | 2 | F- 62,480<br>S- 62,480 | | 29 |
| | AFC-113 | Joint Oregon-Washington multijurisdictional salmon management program | 1981 | 3 | F-865,607<br>S-432,804 | | 29 |
| | AFC-117 | Assessment of the ocean distribution and contribution of northern California and southern Oregon fall chinook stocks | 1981 | 3 | F- 65,936<br>S- 65,936 | | 29 |
| | AFC-121 | Management of the troll salmon fishery | 1982 | 1 | F- 24,710<br>S- 24,710 | 1983 | 29 |
| | AFC-122 | Stock assessment of anadromous salmonids | 1982 | 1 | F- 20,575<br>S- 20,575 | 1983 | 29 |
| | AFC-123 | Evaluation and development of techniques for salmon and steelhead trout culture | 1982 | 1 | F- 54,715<br>S- 54,715 | 1983 | 30 |
| | PENNSYLVANIA | | | | | | |
| 88-309 | 3-337-R | Guidelines for effective management of commercial fish hatchery wastewater treatment systems | 1980 | 5 | F-235,511<br>S- 78,504 | | 23 |
| | 3-339-R | Lake Erie commercial fishery investigations | 1980 | 4 | F-223,731<br>S- 74,577 | | 26 |
| | PUERTO RICO | | | | | | |
| 88-309 | 2-395-R | Puerto Rico commercial fisheries research and development program | 1983 | 3 | F- 750,573<br>S- 250,191 | | 23 |
| | RHODE ISLAND | | | | | | |
| 88-309 | 3-376-R | Coastal fishery resource assessment | 1983 | 3 | F- 86,400<br>S- 28,800 | | 34 |
| 89-304 | AFC-2 | Fish ladder construction | 1974 | 9 | F- 89,967<br>S- 89,967 | 1983 | 19 |
| | AFC-4 | Striped bass stock assessment in Rhode Island waters (Emergency Striped Bass Research Study) | 1981 | 3 | F- 60,000<br>S- 30,000 | | 32 |

| Public Law | Project number and title | | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | SOUTH CAROLINA | | | | | | |
| 88-309 | 2-392-R | A biological evaluation of the knobbed whelk fishery in South Carolina | 1982 | 2 | F- 61,300<br>S- 20,433 | | 26 |
| 89-304 | AFC-20 | Monitoring and assessment of the S.C. commercial fishery for shad (FY 1983) | 1983 | 2 | F-95,550<br>S-95,550 | | 27 |
| | SOUTH DAKOTA | | | | | | |
| 88-309 | 1-163-R | Bionomics of rainbow smelt | 1982 | 1 | F- 10,000<br>S- 3,333 | 1983 | 26 |
| | 1-173-R | An estimate of abundance and distribution of rainbow smelt in Oahe Reservoir using hydroacoustic techniques | 1983 | 5 | F-139,331<br>S- 46,444 | | 26 |
| | TENNESSEE | | | | | | |
| 88-309 | 2-373-R | Mussel resources survey | 1980 | 4 | F- 75,000<br>S- 25,000 | | 35 |
| | TEXAS | | | | | | |
| 88-309 | 2-385-R | Texas commercial fisheries management program | 1982 | 1 | F-240,000<br>S- 80,000 | 1983 | 37 |
| | TRUST TERRITORY OF THE PACIFIC ISLANDS | | | | | | |
| 88-309 | 4-54-D | Palau reef fish production | 1982 | 1 | F- 42,300<br>S- 17,660 | 1983 | 39 |
| | 4-55-D | Truk Lagoon small purse seine demonstration | 1982 | 2 | F- 57,000<br>S- 19,000 | | 34 |
| | UTAH | | | | | | |
| 88-309 | 1-149-R | Physiological/genetic studies of trout strains in commercial and agency hatcheries | 1979 | 5 | F-121,800<br>S- 45,362 | | 21 |
| | 1-156-R | Potential of Utah chub to support a baitfish industry | 1980 | 3 | F- 31,037<br>S- 10,980 | 1983 | 24 |
| | VIRGIN ISLANDS | | | | | | |
| 88-309 | 2-335-R | Commercial fisheries research and development in the U.S. Virgin Islands | 1978 | 5 | F-134,205<br>S- 44,735 | | 34 |

| Public Law | Project number and title | | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | VIRGINIA | | | | | | |
| 88-309 | 3-321-D | Fisheries profiles and plans | 1979 | 4 | F-228,153<br>S- 76,051 | 1983 | 23 |
| | 3-361-D | Commercial finfishery and shellfishery statistical collection | 1982 | 3 | F-252,300<br>S- 84,099 | | 39 |
| | 3-377-D | Development of oyster resources | 1983 | 1 | F-30,646<br>S-10,215 | | 36 |
| 89-304 | AFC-10 | Anadromous fisheries research program, Virginia | 1979 | 5 | F-386,782<br>S-386,782 | | 27 |
| | AFC-11 | Assessment of larval striped bass stocks in Virginia waters (Emergency Striped Bass Research Study) | 1980 | 3 | F-226,766<br>S-113,383 | 1983 | 32 |
| | AFC-12 | Striped bass research, Virginia (Emergency Striped Bass Research Study) | 1980 | 4 | F-339,300<br>S-184,698 | | 32 |
| | WASHINGTON | | | | | | |
| 88-309 | 1-154-R | Coastal pink shrimp study | 1979 | 5 | F-110,432<br>S- 36,812 | 1983 | 36 |
| | 1-159-R | Coastal groundfish age determination | 1981 | 3 | F-103,000<br>S- 34,351 | | 28 |
| | 1-167-R | Coastal dungeness crab project | 1982 | 3 | F-110,434<br>S- 36,812 | | 35 |
| | 1-168-R | Coastal marine fish/ shellfish | 1982 | 2 | F- 55,024<br>S- 18,342 | | 37 |
| | 1-170-R | Coastal marine fish management and stock | 1983 | 3 | F-190,082<br>S- 63,361 | | 28 |
| 89-304 | AFC-84 | Development of a spawning gravel cleaning machine | 1977 | 5 | F-137,315<br>S-137,315 | 1983 | 30 |
| | AFCS-104 | Development of Cedar River sockeye and chinook enhancement facility | 1979 | 5 | F-1,255,000<br>S-1,362,000<br>(Includes FWS share) | | 20 |
| | AFC-114 | Joint Washington-Oregon multijurisdictional salmon management program | 1981 | 3 | F-1,560,375<br>S- 780,188 | | 30 |

| Public Law | Project number | Project number and title | Date initiated | Duration | Estimated total cost | Date completed | Project narrative |
|---|---|---|---|---|---|---|---|
| | | | Year | Years | Dollars | Year | Page |
| | AFC-115 | Lake Washington simulation model | 1981 | 1 | F- 31,390<br>S- 31,390 | 1983 | 30 |
| | AFC-117 | Ocean distribution of northern California and southern Oregon fall chinook | 1981 | 3 | F- 65,936<br>S- 65,936 | | 30 |
| | AFC-118 | Treaty Indian catch monitoring system | 1982 | 1 | F- 73,000<br>S-184,751 | 1983 | 30 |
| | AFC-119 | Puget Sound commercial fishery sampling | 1982 | 1 | F- 94,750<br>S- 94,750 | 1983 | 30 |
| | AFC-120 | Coastal freshwater stock assessment | 1982 | 1 | F- 30,250<br>S- 30,250 | 1983 | 30 |
| | WEST VIRGINIA | | | | | | |
| 88-309 | 3-372-R | Commercial fishery investigations | 1982 | 5 | F- 33,750<br>S- 11,250 | | 26 |
| | 3-380-R | Investigation of commercial invertebrate bait harvest | 1983 | 3 | F- 19,500<br>S- 9,453 | | 37 |
| | WISCONSIN | | | | | | |
| 88-309 | 3-299-R | Quota-controlled chub fishery for Wisconsin waters of Lake Michigan | 1978 | 5 | F-101,728<br>S- 33,907 | 1983 | 26 |
| | 3-382-R | Management of a quota controlled commercial chub fishery | 1983 | 4 | F-80,000<br>S-26,664 | | 26 |
| 89-304 | AFC-15 | Rehabilitation of Green Bay walleye fishery | 1979 | 4 | F-132,500<br>S-132,500 | 1983 | 24 |
| | AFC-16 | Assess walleye populations in Green Bay, Lake Michigan | 1983 | 4 | F-161,000<br>S-161,000 | | 24 |
| | WYOMING | | | | | | |
| 88-309 | 1-172-R | Commercial fishery development extension services | 1983 | 4 | F- 80,000<br>S- 26,672 | | 22 |

# PROGRAM ANALYSIS

For program analysis, projects are grouped under the type of activity undertaken rather than by State or Public Law. In doing so, the reader has all projects for the 1983 segment of the program, such as constuction, coordination, or research, in one section.

Under each type of activity included are project identification, principal investigator, and 1983 project segment cost, State and Federal. If projects were continued or completed in 1983 with prior year funds, no cost is indicated below.

Request for additional information about a project or for reprints of reports resulting from the work should be made to the appropriate NMFS Regional Office, State agency, or Cooperator. The Regional Offices, State agencies, and Cooperators, including addresses are listed on pages 40-43

## AQUACULTURE

Colorado 1-169-R — Stephen A. Flickinger — F- 27,366 S- 9,122

Warmwater fish culture - Combined rearing of largemouth bass and black crappie.

Guam 4-58-D — Harry Kami — F- 20,000 S- 48,884

Development of polyculture fish farming - Increase efficiency and expand production of local aquaculture farms.

Hawaii 4-57-D — Takuji Fujimura — F- 0 S- 0

Seaweed investigations - Develop procedure and determine economic feasibility of reestablishing Gracilaria in depleted areas of Hawaii.

Mississippi 2-376-R — George Passokey — F-61,100 S-20,366

Experimental treatment of catfish ponds with algal inhibitors - Evaluate the abundance and diversity of algae associated with off-flavor problems of commercially grown fresh water catfish.

Nevada 4-60-R — Robert E.L. Taylor — F- 14,700 S- 4,900

Production of sterile grass carp - Develop surgical or chemical sterilization methods for grass carp and assess impact of transplanted stocks on aquatic environment.

## CONSTRUCTION

### FISH SCREENS AND STREAM IMPROVEMENT FACILITIES

Massachusetts AFC-19 — Joseph DiCarlo — F- 40,000 S- 40,000

Anadromous fisheries management - Maintain and enhance existing populations, restore historically important populations and establish new populations of anadromous fish, through construction of fish passage facilities.

Rhode Island AFC-2 — John Stolgitis — Completed 1983

Fish ladder construction - Construction of fish passage facilities on Forge Road and Potowomut Pond Dams, Hunts River, and North Kingston-East Greenwich and Bradford Dam on the Pawcatuck River.

HATCHERIES AND HATCHERY FACILITIES

Connecticut AFC-14 — Michael Vernesoni — Completed 1983

Kensington Atlantic salmon hatchery modernization - Increase the availability of production facilities for the rearing of Atlantic salmon smolts for release and re-establishment of this species in the Connecticut River.

Washington AFCS-104 — Donald Bartlett — F-276,820 S-276,820

Development of Cedar River sockeye and chinook enhancement facility - Construct a hatchery, rearing station, fish ladder and caretaker's facilities on the Cedar River near Landsburg Dam.

LABORATORIES

Massachusetts 3-218-C — Leigh Bridges — F- 0 S- 0

Construction of marine research station - Construct a marine research station which will provide central facilities for personnel now located at several temporary installations on Cape Cod.

VESSEL

New York 3-347-C — Chester S. Zawacki — Completed 1983

Marine research vessel acquisition - Acquire a 35-foot research vessel for sampling New York's marine finfish and crustacean resources.

## COORDINATION

Maine 3-359-S — E. Penn Estabrook — F- 10,451 S- 10,452

Coordination of research and development - Administer Maine's Public Law 88-309 program.

New York 3-346-S — Samuel L. Finkelstein — F- 11,250 S- 11,250

Coordination III - Administer Public Law 88-309 projects.

## DISEASE AND PARASITE CONTROL

Idaho I-171-R — George Klontz — F- 38,997 S- 13,000

Proliferative kidney disease in rainbow trout - Examine the epidemiology and phytopathology of PKD in an Idaho trout hatchery.

Maryland 3-366-D — Rudolph Lukacovic — Completed 1983

Fish environmental assessment - Determine distribution and intensity of diseases affecting marine animals (primary focus: molluscan shellfish) in Chesapeake Bay and tributaries by laboratory examination and field observations.

New Jersey 3-364-R — Harold H. Haskin — F- 10,000 S- 3,300

MSX disease and oyster production in Delaware Bay - Provide current information on prevalence and intensity of MSX disease on oyster populations in Delaware Bay with a view toward modification of planting practices to minimize oyster disease losses.

North Dakota 1-146-R — Harry L. Hollaway — Completed 1983

Biology of Diplostomum spathaceum (eye-flukes) and its relationship to fish of commercial value - Determine incidence and effects of eye flukes on North Dakota reservoir fish.

Oregon AFC-98 — John Conrad — Completed 1983

Infectious disease program for salmon and steelhead hatcheries - Monitor fish condition and investigate epizootics to identify pathogens and prescribe control measures.

Utah 1-149-R — Charles Berry — F- 20,000 S- 6,417

Physiological/genetic studies of trout strains in commercial and agency hatcheries - Evaluate rainbow trout strains and rough fish for survival and disease resistance.

## EXTENSION SERVICE

American Samoa 4-46-D — Henry Sesepasara — Completed 1983

Fisheries technical assistance - Provide training and advisory services to local fishermen.

Delaware 3-358-D — Charles A. Lesser — F- 29,400 S- 9,800

Technical assistance to commercial fisheries - Provide technical assistance to commercial fishermen, seafood industries, and government authorities on management, enforcement, and dissemination of data to improve management and economics of Delaware's commercial fisheries industries.

Florida 2-336-D — Sally S. Patrenos — F-142,550 S- 47,517

Fisheries extension and marketing services program - Initiated extension program designed to teach professional foods people the techniques of fish cookery; proper handling, storing, and preparing fish; and ways to maintain and expand consumer demand for fishery products.

Florida 2-405-D — Charles C. Thomas — F- 175,000 S- 58,333

Create and develop educational materials for use in training - Create a greater demand for seafood. Enhance public image of mullet, Spanish mackerel, rock shrimp, shark, croaker, squid, dolphin, etc., introduce and encourage the purchase of same. Provide industry with technical assistance and market development. Increase economic impact to State by increasing new markets throughout the United States.

Maine 3-368-D — Frank Spencer — F- 24,140 S- 24,140

Fisheries technology service - Assist and disseminate information to the fishing industry of Maine on the latest developments in management, harvesting, and processing of renewable marine resources.

Maryland 3-365-D — F. William Sieling III — Completed 1983

Fisheries technology and advisory services - Facilitate communication between the biological-technical-managerial faculty and the producers and processors of fishery products in Maryland.

Massachusetts 3-363-D — Susan Faria/H. Arnold Carr — F- 91,656 S- 30,552

Commercial fisheries development program - Promote the harvesting, processing, and consumption of underutilized species, identify and introduce new and efficient fishing and processing techniques, promote proper handling of seafood to improve quality of fresh product available to the public, and increase effectiveness of communications between government and industry.

New Jersey 3-340-D | William Figley | Completed 1983

Marine fisherman's coordination project - Provide the mechanism for the efficient dissemination of new commercial fishing technology, legislation and regulations, and results of pertinent scientific investigations to the commercial fishing community and the general public.

New Jersey 3-388-D | John Makai | F- 24,375 S- 8,125

Marine fishermen's coordination project - Provide communication pathway between commercial fishermen, processors, dealers, and New Jersey fisheries management agencies; address current concerns and needs of the commercial fishing industry which generates $170 million to the state's economy.

Wyoming 1-172-R | John Baughman | F- 20,000 S- 6,668

Commercial fisheries development extension services - Assist and disseminate to the fishing industry and potential users concerning information on carp, sucker, and bait minnow populations in Wyoming reservoirs and streams.

## MARKET DEVELOPMENT

American Samoa 4-63-D | Henry Sesepasara | F- 0 S- 0

Export Fish Marketing - Provide central coordination for the development of an export market for American Samoa caught fish.

## OPERATION AND MAINTENANCE

New Hampshire AFC-5 | Charles F. Thoits III | Completed 1983

Operation and maintenance of the Milford hatchery - Provide the personnel, feed, medication, and other activities necessary for the hatching and rearing to smolt size of approximately 500,000 anadromous salmonids.

New Hampshire AFC-6 | Peter F. Brezosky | F- 90,000 S- 90,000

Operation and maintenance of the Milford hatchery - Hatch and rear approximately 320,000 anadromous salmonids to accommodate fish cultural needs for the restoration of Atlantic salmon to the Merrimack River Basin and to generate a coastal recreational fishery for coho and chinook salmon.

## PLANNING

New Hampshire 3-351-R | Edward Spurr | Completed 1983

A comprehensive marine resources strategy - Develop a comprehensive strategy to address commercial fisheries research and development requirements based on an analysis of the major problems and priorities affecting New Hampshire's fisheries.

Virginia 3-321-D Daniel J. Lonergan Completed 1983

Fisheries profiles and plans - Assemble known biologic, economic, and sociologic data as they relate to the commercial fisheries on a species by species basis and implement a grid system mapping the subaqueous land of Virginia.

## RESEARCH

ENVIRONMENT

Marine:

Maine 3-390-D Walter R. Welch F-21,150
S-21,150

Environmental monitoring system renovation - Provide data on marine environmental parameters critical to the assessment of events and biological conditions affecting the commercial fisheries.

Estuarine:

Nebraska 2-402-R Gene Zuerlein F- 49,082
S- 16,361

"Nebraska Commercial Fishery Investigations" - To manage the commercial fishery permit system and to compile and analyze the reported production and catch statistics.

Freshwater:

Pennsylvania 3-337-R Delano R. Graff F-27,666
S- 9,222

Guidelines for effective management of commercial fish hatchery wastewater treatment systems - Evaluate different types of wastewater treatment systems to assist the commercial fish growers.

Puerto Rico 2-395-R Jose A. Cardosa F-270,573
S- 90,191

Puerto Rico Commercial Fisheries Research & Development Program - (1) Survey shallow water reef fishes at selected areas round the island to determine distribution, abundance, seasonality, and population fluctuation throughout the year cycles of selected commercially important shallow water reef fish populations.
(2) Record of fish landings will be made by species and gear in order to provide information on species' composition, relative abundance, and gear catch efficiency. Publications, quarterly bulletins and correspondence will be provided to interested persons and agencies for the benefit of the fishing industry. The project will continue of furnish data for inclusion in the annual summary of U.S. fisheries statistics.
(3) To provide with the required routine operations and maintenance for the physical facilities where the Puerto Rico Fisheries Research and Development Program activities are based.

FINFISH (FRESHWATER)

Baitfish:

| | | |
|---|---|---|
| Colorado 1-161-R | John Woodling | F- 9,828<br>S- 3,276 |

Baitfishes of Colorado - Prepare and publish a manual on identifying, rearing and using the baitfish resources of Colorado.

| | | |
|---|---|---|
| Utah 1-156-R | Charles Berry | Complete 1983 |

Potential of the Utah chub to support a baitfish industry - Analyse the impact on fishery resources of the Utah chub and determine present and future demand in the baitfish industry in Utah.

Carp:

| | | |
|---|---|---|
| Illinois 3-383-R | K.S. Lubinski | F- 10,000<br>S- 3,334 |

Age structure and analysis of carp populations in the Mississippi and Illinois Rivers - Characterize the age structure of carp populations in selected Mississippi and Illinois River pools to explain recent declines in the number and size of harvested fish.

Walleye:

| | | |
|---|---|---|
| Michigan AFC-14 | Robert Haas | Completed 1983 |

Lake Erie walleye assessment - To determine the distribution and harvest of walleye stocks in western Lake Erie.

| | | |
|---|---|---|
| Wisconsin AFC-15 | Lee Kernen | Completed 1983 |

Rehabilitation of Green Bay walleye fishery - Evaluate success of stocked fingerling and fry walleyes and double the existing standing stock through planting and curtailment of harvest.

| | | |
|---|---|---|
| Wisconsin AFC-16 | Lee Kernen | F- 35,000<br>S- 35,000 |

Assess walleye populations in Green Bay, Lake Michigan - Maintain, through a stocking and assessment program, an adult walleye standing stock of at least four per acre in Green Bay, while providing a sustained commercial harvest of 10,000 pounds or more annually in Lake Michigan.

Whitefish:

| | | |
|---|---|---|
| Michigan 3-384-R | R.W. Rybicki | F- 19,000<br>S- 7,000 |

Assessment of whitefish populations in the treaty area of Lake Michigan - Monitor whitefish harvest in the commercial trapnet fishery, determine relative abundance of pre-recruits, and forecast the total allowable yield of whitefish in the treaty waters of Lake Michigan.

Yellow perch:

| | | |
|---|---|---|
| Indiana 3-336-R | Thomas S. McComish | Completed 1983 |

Movements of yellow perch in Indiana waters of Lake Michigan - Determine, through tagging, seasonal distribution of yellow perch by size, age, sex, maturity, temperature and depth.

Indiana 3-387-R — Thomas S. McComish — F- 21,410 S- 23,569

Selected characteristics of the yellow perch stock in Indiana Waters of Lake Michigan - Determine abundance, age and growth, size at sexual maturity, food habits, and fecundity of yellow perch in Indiana waters of Lake Michigan.

Ohio 3-379-R — F. Joseph Margraf — F- 64,500 S- 21,500

Ecology of yellow perch in Lake Erie - Determine whether management models for yellow perch in Lake Erie can be improved by examining the relative importance of food availability and temperature as factors causing differences in growth rates between western and central basin populations.

Others:

Arkansas 2-371-R — Tommie Crawford — F-26,400 S- 8,800

Commercial fishery survey - Gather data and compile information concerning the status of wild commercial fishery resource and evaluate regulations for commercial fishing.

Iowa 2-384-R — John G. Nickum — F-20,000 S- 6,667

Habitat associations and movements of shovelnose sturgeon with reference to spawning - Determine the habitats and other physical factors required by shovelnose sturgeons for successful reproduction in order to protect and enhance productivity of this commercial species.

Iowa 2-399-R — John C. Nickum — F- 20,000 S- 6,667

To determine the habitats and other physical factors required by shovelnose sturgeon during their first year of life in order to protect and enhance productivity of this commercial species.

Kentucky 2-388-R — Robert D. Hoyt — F- 20,000 S- 6,667

Population dynamics and biology of the paddle fish Polydon spathula in Lake Cumberland, KY- Estimate the size of the paddlefish population using mark and recapture methods.

Louisiana 2-394-R — William S. Perret — F- 240,000 S- 80,000

Research, Development, and Management of Louisiana's Coastal Fisheries - To complete and maintain a network of permanent survey monuments throughout coastal Louisiana for the purpose of surveying oyster leases.

Minnesota 3-344-R — John Spurrier — F- 20,000 S- 9,500

Lake Superior commercial fisheries assessment studies - Ascertain and monitor the status of lake trout and commercial fish stocks (lake herring, chubs, smelt) in the Minnesota waters of Lake Superior.

Montana 1-162-R — Robert Needham — F- 25,333 S- 6,333

Development and management of commercial fishing practices - Assess the commercial and gamefish species in Fort Peck reservoir.

New Mexico 2-366-R — Bob Patterson — F- 24,401 S- 8,134

Intensive harvest of commercial species - Determine the effect of intensive harvest of white suckers on the fish populations in trout lakes.

Ohio 3-301-R — Michael R. Rawson — F- 0 S- 0

Commercial fishing gear mortality - Determine the effects of season, area, catch size, and net time on immediate mortality of commercial gear net-released fishes and develop management proposals.

Oklahoma 2-396-2-397 & 2-398 combined. — Harold Namminga — F- 22,037 S- 7,346

Oklahoma Commercial Fisheries Project; Collect and analyze commercial fishery harvest results - To monitor selected fish populations in lakes undergoing commercial harvest in Oklahoma. To evaluate a contract commercial fishing program on Ft. Gibson Lake by determining composition, size, catch rate, and value of the fish catch and harvest.

Pennsylvania 3-339-R — Roger Kenyon — F- 66,219 S- 22,073

Lake Erie commercial fishery investigations - Investigate year class fluctuations and early life histories of yellow perch, smelt, drum, whitefish, and walleye.

South Carolina 2-392-R — Bill Anderson — F- 25,300 S- 8,433

A Biological Evaluation of the Knobbed Whelk Fishery in South Carolina - (1) To determine selected biological characteristics of commercially harvested whelks; (2) To evaluate populations exposed to continued or increased exploitation; and (3) To prepare a written technical report incorporating the findings and data resulting from the project.

South Dakota 1-163-R — David Hamm — Completed 1983

Bionomics of the rainbow smelt - Monitor the impacts of rainbow smelt population on a developing salmonid sport fishery in Lake Oahe.

South Dakota 1-173-R — David Hamm — F- 30,201 S- 10,067

An estimate of abundance and distribution of rainbow smelt in Oahe Reservoir using hydroacoustics - Obtain baseline data and develop management methodology.

West Virginia 3-372-R — Fred Leckie — F- 6,750 S- 2,250

Commercial fishery investigations - Administer and monitor the Ohio River commercial fishery in West Virginia.

Wisconsin 3-299-R — Jim McNelly — Completed 1983

Quota-controlled chub fishery for Wisconsin waters of Lake Michigan - Continue the State's chub assessment program to evaluate changes in the population to determine allowable harvest.

Wisconsin 3-382-R — Lee Kernen — F- 20,000 S- 6,666

Management of a quota-controlled commercial chub fishery - Determine the population parameters required to annually calculate harvest quotas for the Lake Michigan commercial chub fishery with the ultimate objective of sustaining a harvest of 4 million pounds per year by 1991.

FINFISH (MARINE OR ANADROMOUS)

Alewife and herring:

Maine AFC-21 — Clement J. Walton — Completed 1983

Population biology and management of the alewife (Alosa pseudoharengus) in Maine- Determine population characteristics and monitor catch, escapement, and production levels of the Damariscotta River alewife stock.

Maine AFC-25 — C. J. Walton — F-14,109 S-14,109

Population biology of the alewife - Monitor parameters of the Damariscotta River alewife stock and develop a population model to evaluate priorities for alewife management.

Virginia AFC-10 — Joseph G. Loesch — F- 0 S- 0

Anadromous fisheries research program, Virginia - To collect catch and effort statistics from the Virginia river herring, American shad, and striped bass fisheries and determine indices of juvenile abundance to update the existing data base.

American shad:

Connecticut AFC-13 — Victor Crecco — F- 42,000 S- 42,000

Population dynamics of American shad in the Connecticut River - Determine levels of commercial fishing effort which furnish the highest sustainable yields and ensure an adequate spawning population; project the size of future spawning runs and gain insight into stock recruitment.

Georgia AFC-18 — Ronald J. Essig — Completed 1983

Georgia Commercial shad Assessment - Quantify commercial shad landings, determine catch per unit effort and analyze data.

Maine AFC-23 — Thomas Squiers — F- 40,000 S- 40,000

Kennebec River anadromous stock evaluation - Determine relative abundance indices for juvenile alosids and draft an Anadromous Fish Restoration Plan for the Kennebec River.

Maine AFC-24 — Lewis N. Flagg — F- 16,280 S- 16,280

Androscoggin River shad restoration, Maine - Restore anadromous fish runs to the Androscoggin River, determine timing/magnitude/reproductive success of anadromous clupeid runs, and assess upstream fish passage efficiency.

South Carolina AFC-20 — Glenn Ulrich — F- 45,500 S- 45,500

Monitoring & Assessment of the South Carolina Commerical Fishery for Shad (FY83) - Collect catch/effort indices of abundance of American Shad for determination of stock status. Monitor age, size and sex composition of shad on major river systems and in the near-shore, ocean fishery. Collect commercial landings data from the network of outlets. Maintain and expand network of cooperating wholesale and retail outlets, marketing shad to provide comprehensive catch data. Compare statistic of shad caught in 4½" and 5½" mesh drift gill nets. Estimate spawning run by sampling the commercial catch. Investigate hickory shad resources of Waccamaw-Pee Dee River system, collecting life history.

Atlantic herring:

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| Maine 3-389-R | David A. Libby | F- 6,865<br>S- 6,866 |

Brit herring tagging studies - Refine brit tagging methods and assess movement patterns to determine geographical and seasonal contributions of brit to the commercial fishery.

Groundfish:

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| Alaska 5-49-R | Phil Rigby | F- 60,000<br>S- 67,000 |

Gulf of Alaska - Bering Sea groundfish investigations - Collect landing data for groundfish caught off Alaska. Provide increased reporting accuracy of vessels, catch areas, and species composition, to gain better knowledge of the fisheries and status of stocks.

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| Washington 1-159-R | Mark Pedersen | F- 34,214<br>S- 11,404 |

Coastal groundfish age determination - Collect information for groundfish management plan data base.

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| Washington 1-170-R | Al Millikan | F- 56,681<br>S- 18,894 |

Coastal marine fish management - Collect and analyze stock assessment data from port samplers, log books and research cruises to implement and monitor the Pacific Fishery Management Council groundfish management plan.

Pacific herring:

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| Alaska 5-50-R | Stephen M. Fried | F-120,000<br>S- 40,500 |

Stock assessment of Pacific herring, Bristol Bay, Alaska - Monitor the commercial Pacific herring roe fishery in the vicinity of Togiak Bay, western Alaska. Estimate biomass of spawning herring and estimate commercial fishery exploitation rate. Determine age composition, size, and sexual maturity of Pacific herring on the spawning grounds and harvested by the commercial fishery.

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| Alaska 5-51-R | Dennis Blankenbeckler | F- 60,000<br>S- 20,000 |

Pacific herring research - S.E. Alaska - Monitor the commercial Pacific herring roe fishery in southeast Alaska. Assess stock abundance with hydroacoustical equipment. Collect data on age, growth, and length frequencies. Survey spawning grounds to assess spawning success.

Pacific salmon:

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| Alaska AFC-65 | Donald E. Rogers | F- 30,000<br>S- 30,400 |

Chignik sockeye studies - Estimate late season escapements of sockeye salmon into Chignik River on the Alaska Peninsula. Determine how prey selection behavior of sockeye salmon juveniles in Chignik Lake affects daily ration as a preliminary step to developing a growth and survival model for sockeye salmon juveniles in the lake.

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| Alaska AFC-67 | Philip Gray | F-110,000<br>S-127,900 |

Microwire tagging of wild coho salmon stocks - Evaluate and refine management techniques for wild coho salmon stocks in southeast Alaska through coded wire tagging studies.

Alaska AFC-70 — Fred Bergander — F- 65,000 S- 68,700

Southeastern Alaska sockeye salmon stock apportionment studies - Collect information for the management of salmon fisheries and to construct a data base for forecasting timing and size of salmon runs and allocating salmon stocks to commercial fisheries. Provide a mark-recovery and biological sampling program for decision-making.

Alaska AFC-71 — Doug Jones — F-115,000 S-164,200

Southeastern Alaska pink and chum salmon studies - Insure optimum escapement of pink and chum salmon spawners into streams of southeast Alaska. Forecast timing, distribution, and magnitude of pink and chum salmon returns. Investigate and define relationships between environmental fluctuations of salmon returns.

Alaska AFC-72 — Scott Marshall — F-136,600 S-291,500

Southeastern Alaska port sampling - Determine migration routes, run timing, relative abundance, and contribution rates based on data obtained from results of coded wire tag recoveries.

California AFC-16 — A.C. Knutson, Jr. — F-362,000 S-362,000

Salmon and steelhead research, management and enhancement - 1) Determine numbers and pounds of commercial salmon landings and the contribution of marked and hatchery reared fish to the fishery. 2) Determine the spawning stock size - recruitment relations for Klamath basin salmon and steelhead.

Oregon AFC-102 — Jim Lichatowich — F-206,107 S-206,107

Research and development of Oregon's coastal fish stocks - Conduct field investigations on fall chinook and coho in the Sixes, Coquille and Elk Rivers.

Oregon AFC-111 — John Harville — F- 65,366 S- 32,683

Regional Mark Processing Center - Operate the Regional Mark Processing Center for identification of salmon stocks tagged, released and recovered in west coast fisheries.

Oregon AFC-112 — Jim Lichatowich — Completed 1983

Stock assessment and genetic studies of anadromous fish - Extract, compile, and analyze coded wire tag data to determine ocean survival, distribution and contribution of selected hatchery and wild stocks.

Oregon AFC-113 — Steve Lewis — F-287,077 S-143,539

Joint Oregon-Washington multijurisdictional salmon management program - Tag hatchery and wild stocks; monitor the commercial and recreational ocean salmon catch at all Oregon landing ports, recover tagged fish, remove and decode tags and enter information in agency computers.

Oregon AFC-117 — John Harville — F- 36,936 S- 36,936

Assessment of the ocean distribution and contribution of northern California and southern Oregon fall chinook stocks - Initiate a logbook program and a concentrated tag recovery effort for depressed Klamath River fall chinook stocks in response to management needs of the Pacific Fishery Management Council.

Oregon AFC-121 — Robert T. Gunsolus — Completed 1983

Management of the troll salmon fishery - Troll salmon landings will be sampled, tabulated and analyzed for formulating management options to achieve optimum benefits from the ocean salmon resource.

Oregon AFC-122 — Jim Lichatowich — Completed 1983

Stock assessment of anadromous salmonids - Selected experimental groups of Oregon coho and chinook smolts will be marked to evaluate improved survival, catch contribution, and altered genetic characteristics.

Oregon AFC-123 Harold Lorz Completed 1983

Evaluation and development of techniques for salmon and steelhead culture - Microbiological and nutrition studies will be conducted at selected state hatcheries.

Washington AFC-84 Gary C. Bailey Completed 1983

Development of a spawning gravel cleaning machine - Develop a machine for removal of detrimental fine materials in natural salmon spawning beds.

Washington AFC-114 Lee Blankenship F-523,000
S-261,500

Joint Washington-Oregon multijurisdictional salmon management program - Tag hatchery and wild stocks; monitor the commercial and recreational ocean salmon catch at Washington landing ports, recover tagged fish, remove and decode tags and enter information in agency computers.

Washington AFC-115 Steve Schroder Completed 1983

Lake Washington simulation model - Determine by simulation modelling, the effects of implanting trout and various fishery management techniques upon sockeye, chinook, and coho that utilize the Lake Washington watershed.

Washington AFC-117 John Harville F- 36,936
S- 36,936

Ocean distribution of northern California and southern Oregon fall chinook - Initiate a logbook program and a concentrated tag recovery effort for depressed Klamath River fall chinook stocks.

Washington AFC-118 Gary Graves-Northwest Indian Fisheries Commission Completed 1983

Treaty Indian catch monitoring system - Establish and maintain a computerized record of salmon catch by 15 western Washington Treaty Tribes.

Washington AFC-119 Paul Sekulich Completed 1983

Puget Sound commercial fishery sampling - Collect catch data from the Puget Sound net fisheries.

Washington AFC-120 Bill Wood Completed 1983

Coastal freshwater stock assessment - Conduct spawning surveys for estimating juvenile production in major Washington watersheds between Grays Harbor and the Quillayute River.

Striped bass:

Alabama AFCS-12 R. Vernon Minton Completed 1983

Striped bass production and stocking experiments in Alabama coastal areas (Study No. 2) - To reestablish a striped bass fishery in Alabama by aquaculture and release of fingerlings.

Alabama AFC-13 Wayne Shell Completed 1983

Increasing yield of striped bass fingerlings through intensive culturing methods - Develop diets for larval and postlarval fish and determine disease organisms affecting survival and recommend treatment.

Alabama AFC-21 — Dr. R.T. Lovell — F-13,120 S-13,120

Development of the digestive tract of striped bass will be studied histologically and enzymatically from hatching until maturity.

Alabama AFCS-23 — Walter M. Tatum — F- 106,560 S- 53,280

To rear striped bass eggs or sac fry to phrase I size fingerlings for stocking hatchery ponds and to produce Phase II fingerlings 20g or larger for tagging and stocking. Harvest, mark and stock equally Phase II striped bass fingerlings into coastal streams. To monitor and assess the effects of past and present stocking of striped bass fingerlings.

Maryland AFC-11 — W.R. Carter — F- 20,000 S- 10,000

Striped bass research, Maryland - To estimate striped bass egg and larval distribution and abundance in the Potomac estuary.

Maryland AFC-13 — Edward D. Houde — Completed 1983

Striped bass fishery enhancement investigations - Determine relative viabilities and potential for growth of striped bass larvae originating from adult stock spawning in three areas of Chesapeake Bay, and develop methods to use hatchery stocks to aid in population assessment of wild populations.

Massachusetts AFC-18 — Randall Fairbanks — F- 20,000 S- 2,222

Characterization of Massachusetts commercial striped bass landings - Determine age and sex by season and location of commercially caught striped bass in Massachusetts waters.

Mississippi AFCS-7 — Thomas D. McIlwain — Completed 1983

Striped bass restoration program - Mississippi Gulf Coast - Stock South Carolina striped bass in the Biloxi Bay system and establish a strain which will use the coastal streams, estuaries, and open Gulf of Mexico waters.

New Jersey AFC-5 — Peter J. Himchak — Completed 1983

Monitoring of the status of the striped bass population in New Jersey - Estimate recruitment of young-of-year striped bass to the state fishery and characterize by age, sex and size the striped bass fishery in New Jersey waters.

New Jersey AFC-6 — Peter J. Himchak — F- 20,000 S- 10,000

Monitoring of the status of the striped bass population in New Jersey - Monitor striped bass recruitment in the Delaware River, identify nursery habitat, and characterize landings in the recreational fishery.

New York AFC-11 — Robert E. Brandt — F- 21,000 S- 10,484

Biology and management of striped bass in New York waters - To provide useful and vitally needed information for development of interim regulations for striped bass conservation and management in state waters.

New York AFC-12 — Byron Young — F- 61,700 S- 61,700

A study of the striped bass in the marine district of New York State IV - Continue collection of size, age, and sex data for the striped bass fishery, assess the effectiveness of management strategies in New York, and study striped bass production in the Hudson River to provide indices of year-class strength.

North Carolina AFC-18 — Michael W. Street — F- 24,000 S- 12,000

An investigation of size, age, and sex of North Carolina striped bass - To determine size, age, and sex of striped bass found in the Roanoke River, Albemarle Sound and the Atlantic ocean off North Carolina.

North Carolina AFC-19 — Michael W. Street — F- 34,000 S- 34,000

Roanoke River striped bass investigation - Estimate the magnitude of the spawning population by the mark-recapture method; determine exploitation rate of different harvest methods. Estimate the commercial and recreational harvest of striped bass in Roanoke River and the fishing effort expended. Estimate the relative number of striped bass eggs spawned in the major spawning area. Determine if relationships can be demonstrated among various environmental factors and relative abundance of striped bass in Roanoke River and Albemarle Sound.

North Carolina AFCS-22 — Sara E. Winslow — F- 80,000 S- 80,000

To obtain information needed to manage the fishery for shads and river herring in North Carolina. To obtain information on striped bass and determine the effects of stocking juvenile striped bass on natural coastal striped bass populations and on the striped bass fisheries.

Rhode Island AFC-4 — John F. O'Brien — F- 20,000 S- 10,000

Striped bass stock assessment in Rhode Island waters - Characterize the composition of Rhode Island striped bass commercial landings to help assess the current status of coastal stocks and determine the level of exploitation by various fisheries.

Virginia AFC-11 — George C. Grant — Completed 1983

Assessment of larval striped bass stocks in Virginia waters - To estimate striped bass egg and larval abundance and distribution in the York River system.

Virginia AFC-12 — Robert K. Dias — F-75,000 S-37,500

Striped bass research, Virginia - To establish relative numbers of juvenile striped bass and identify cohabitant species in the James, York, and Rappahannock River systems.

Others:

Alabama 2-391-R — Walter M. Tatum — F- 119,700 S- 39,900

Research and Management of Alabama Coastal Fisheries - Project (1) Monitor the abundance of post larval, larval, juvenile and adult shrimp, fish, crabs and oysters; assess and monitor stages of penaeid shrimp, blue crab and fish, in Alabama waters and recommend harvest and management regulations.

Project (2) to review and appraise the environmental degraduation potential or possible benefits arising from proposed construction and development in coastal Alabama. Develop public awareness of importances of the estuarine area and its' related eco system of the coastal fisheries resources.

Project (3) Spawn and produce larvae from marine species deemed to possess mariculture potential in Alabama including, but not limited to, the following species: gulf killifish, red drum, spotted seatrout, red snapper, Florida pompano and southern flounder.

Rear fish produced in ponds.

American Samoa 4-65-D — Henry Sesepasara — F- 0 S- 0

PVC Pipes Bottomfish Longlining - Determine the effectiveness of a new longlining method in American Samoa Waters.

California 4-59-D. — Richard Klingbeil — F- 0 S- 0

Fisheries monitoring and assessment program - Monitoring, assessment, and evaluation of the commercial fisheries of Southern California.

California 4-62-D — Michael Herder — F- 240,000 S- 80,000

Southern California Commercial Fisheries Assessment - Monitoring of fresh fish markets and assessment of interactions between the drift gill net shark and swordfish fishery and marine mammals.

Florida 2-341-R — Karen Steidinger — F- 78,090 S- 26,030

Florida's marine resources research, development, and management program - Project 1: establish population and catch information for the management of selected marine vertebrate and invertebrate species. Project 2: Establish life history information for the management of marine fisheries. Project 3: Establish and refine aquaculture techniques for spawning and rearing of Macrobrachium.

Florida 2-408-R — Karen Steidinger — F- 100,000 S- 33,333

Determine size composition and movements of blue crab in Apalachee Bay, Charolette Harbor and 10,000 Islands. Determine handedness, claw breakage and regeneration of stone crabs harvested by Florida west coast fishermen. Determine genetic identity of various stocks of red drum to assess the hypothesis of multiple isolated populations. Determine age, growth, reproduction, etc., for groupers; and effects of current fishery practices of sublegal spiny lobsters.

Maine 3-378-R — David B. Sampson — F- 51,344 S- 51,344

Early life histories of commercial shrimp and fishes - Study relationship between growth and survival of larval shrimp and fishes and the abundance and quality of other planktonic organisms; also, assess recruitment of juvenile groundfish from inshore concentrations to offshore adult populations.

Maryland AFC-10 — C.J. O'Dell — Completed 1983

Survey and inventory of anadromous fish spawning areas - To determine which streams in the Patuxent River basin support spawning migrations of anadromous and estuarine fish and to identify species and spawning areas.

Maryland AFC-14 — C.J. O'Dell — F- 74,620 S- 74,620

Anadromous fish research, Maryland - Conduct spawning stock assessment of anadromous fish populations in the Choptank and Susquehanna Rivers, monitor commercial landings of alewife and blueback herring in Fishing Bay, and investigate adverse watershed conditions which affect migratory passage.

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| Massachusetts 3-287-R | Arnold B. Howe | Completed 1983 |

Coastwide fishery resource assessment - Determine species composition and abundance of fish populations in coastal Massachusetts waters.

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| Massachusetts 3-375-R | Arnold B. Howe | F- 82,100<br>S- 82,100 |

Massachusetts fishery resource assessment - Collect information on abundance, distribution, and size composition of the fishery stocks in Massachusetts coastal waters to provide essential data for managing marine fishery resources in territorial waters and the Fishery Conservation Zone.

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| New Jersey 3-367-R | Paul G. Scarlett | F- 27,825<br>S- 9,275 |

Life history investigations of marine fisheries - Determine migrations, seasonal movements, and stock identification of winter flounder and blue crabs from selected New Jersey estuaries, and assess the distribution of flounder harvest between commercial and recreational fishermen.

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| North Carolina 2-386-R | Michael W. Street | F- 66,400<br>S- 22,134 |

Assessment of North Carolina commercial finfisheries: Project I: Determine relative abundance, growth, ages, species composition, distribution and migration of species in the long haul and pound net fisheries of the Pamlico Sound area and the winter trawl fishery in the territorial sea. Project II: Determine the number of populations of Atlantic croaker in an area between Chesapeake Bay and South Carolina. To determine the degree of intermixing of populations in this area. Project III: Obtain data on migration and stock identification of Micropogonias undulatus.

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| North Carolina AFCS-16 | Michael W. Street | F-216,355<br>S-216,355 |

North Carolina anadromous fisheries management program - Collect, analyze, and report information on North Carolina anadromous fisheries for use in management of the fisheries and eventual preparation of management plans.

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| Oregon 1-151-R | Robert Demory | Completed 1983 |

Groundfish and shrimp assessment - Collect and analyze fishery and research data to determine stock size, yield, catch per unit effort, and mortality rates.

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| Rhode Island 3-376-R | Timothy R. Lynch | F- 28,800<br>S- 9,600 |

Coastal fishery resource assessment - Collect fishery statistical data for the development of recruitment indices for commercial stocks in Rhode Island coastal waters needed for designing management measures in State and Federal waters which are responsive to year class fluctuations and the dynamics of the respective fisheries.

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| Trust Territory 4-55-D | Michael C. White | F- 0<br>S- 0 |

Truk Lagoon small purse seine demonstration - Development of small purse seine for harvesting small pelagics in Truk Lagoon.

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| Virgin Islands 2-335-R | Ralf H. Boulon | F- 20,000<br>S- 6,667 |

Commercial fisheries research and development in the U.S. Virgin Islands - To identify needs and implement management strategies to achieve the optimum sustained use of the Virgin Islands commercial marine fishery resources: Part I: Fisheries statistics of the Virgin Islands - To collect, analyze, and evaluate fisheries statistics in the U.S. Virgin Islands in order to acquaint administrative levels with the real value and extent of Virgin Islands fisheries and so enable enhacement through planning facilities and programs. Part II: Monitoring and assessment of Virgin Islands fisheries - To identify, recommend, and implement commercial fishery management practices for the Virgin Islands marine resource.

SHELLFISH

Clams:

Arizona 4-56-D — Dave Roe — F- 0 S- 0

Distribution and relative abundance of freshwater clams - Stock assessment of Corbicula sp. of the Colorado River.

Crabs:

Washington 1-167-R — Tom Northup — F- 37,002 S- 12,334

Coastal dungeness crab project - Sample crab at canneries and landings ports to collect management data.

Lobster:

Connecticut 3-374-R — Mark Blake — F- 20,000 S- 20,700

Connecticut lobster investigations - Study adult population characteristics, reproductive abnormalities, larval ecology, and juvenile abundance of American lobster in Long Island Sound.

Maine 3-370-R — James C. Thomas — F- 97,372 S- 97,372

Lobster stock assessment - Monitor current and previous biological and socio-economic conditions in Maine's lobster fishery, increase precision of population parameters, and study interaction of spawning stock size, egg production and nursery areas, to resultant recruitment into the commercial harvest.

New York 3-357-R — Philip T. Briggs — F- 7,840 S- 7,840

Investigation of the American lobster in eastern Long Island Sound - Assess the size composition, sex ratios, size at maturity, movements, mortality rates and incremental growth of American lobsters in eastern Long Island Sound.

Mussels:

Illinois 3-327-R — Richard E. Sparks — Completed 1983

Effects of three commercial harvesting methods on mussel beds - Determine immediate and long-term effects of harvesting methods on Mississippi River mussel beds.

Illinois 3-373-R — Richard E. Sparks — F- 10,000 S- 3,333

Effects of fleeting areas on mussel beds - Determine effects of a new river terminal and barge fleeting area on existing mussel bed in the Illinois River.

Tennessee 2-373-R — John Condor — F- 20,047 S- 6,682

Mussel resources survey - Determine the current population of mussels in the waters of Tennessee.

Oysters:

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| Florida 2-370-D | Lawrence Sangaree | F- 19,360<br>S- 6,453 |

Oyster cultivation by reef construction - Develop techniques to enable oystermen to increase commercial production.

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| Florida 2-407-D | Lawrence Sangaree | F- 100,000<br>S- 33,333 |

Construct approximately 22 to 27 acres of new oyster reefs for the cultivation of oysters. Enhance oyster production by moving live coon oysters out of overcrowded, shallow water areas.

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| Maryland 3-367-R | George Krantz | F- 41,000<br>S- 41,000 |

Monitoring and research of lethal oyster diseases in Chesapeake Bay - Define the extent of recent oyster mortalities in Chesapeake Bay and determine factors responsible for reductions up to 40-percent in yield of marketable oysters in producing areas during the 1982-1983 season.

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| Virginia 3-377-D | VMRC staff | F- 30,646<br>S- 10,215 |

Development of oyster resources - Plant oyster cultch to increase the production of Virginia's commercial oyster industry which contributes in excess of $40 million annually to the State's economy.

Shrimp:

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| Washington 1-154-R | Tom Northup | Completed 1983 |

Coastal pink shrimp study - Conduct survey cruises and monitor coastal pink shrimp landings to collect biological information needs for management under the MFCMA.

Others:

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| Georgia 2-379-R | Susan Shipman | Completed 1983 |

Studies and assessment of Georgia's marine fishery resources - Project I: Determine the seasonal abundance, size ranges and sexual maturity of penaeid shrimp and blue crabs in selected estuarine and coastal marine waters of coastal Georgia, assess various environmental parameters which may affect penaeid shrimp and blue crab populations and availability for harvest, and determine the seasonal and length frequencies of coastal finfishes including but not limited to spotted sea trout (Cynoscion nebulosus), summer trout (C. regalis), spot (Loistomus xanthurus), southern kingfish (Menticirrhus americanus), gulf kingfish (M. littoralis), croaker (Micropogon undulatus), black drum (Pogonias cromis), red drum (Sciaenops ocellata), summer flounder (Paralichthys dentatus), and winter flounder (P. lethostigma). Project II: Determine the major areas in coastal Georgia which harbor high populations of juvenile penaeid shrimp, blue crabs, and coastal finfishes, and define the physical and chemical environmental parameters associated with these areas. Project III: To determine movement and growth of commercially important penaeid shrimp in estuarine and coastal waters along the Georgia coast.

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| Georgia 2-390-R | Susan Shipman | F- 66,700<br>S- 22,233 |

To monitor penaeid shrimp and blue crab populations in coastal Georgia estuaries in order to provide managers with timely information for decisionmaking and to increase the data base of knowledge relative to selected aspects of the life histories of Georgia's major coastal finfishes and shellfish.

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| Louisiana 2-381-R | Philip Bromen | Completed 1983 |

Monitoring and assessment activities in Louisiana's coastal waters - Monitor shrimp and groundfish populations in Louisiana's territorial waters, monitor hydrological conditions associated with biological samples in Louisiana's territorial waters, and correlate hydrological conditions in the territorial waters with biological data collected in the trawl samples.

Mississippi 2-393-R — Robin Overstreet — F- 103,800 S- 34,600

Coastal Fisheries Monitoring & Assessment - Mississippi Coast - Assess adult finfish stocks (spotted seatrout, red drum, striped mullet, and hardhead catfish). Collect and analyze environmental data, and representatives of commercial species of marine shellfish (except oysters) and fishes occurring and captured each month providing management agencies with biological data. Determine condition of oyster reefs, number of live, marketable, spawnable oysters, incidence of diseases and predators.

Mississippi AFCS-24 — Larry C. Nicholson — F- 61,000 S- 30,501

Mississippi/Alabama Cooperative Striped Bass Restoration Program - Restore the striped bass population in the Gulf of Mexico Coastal area of the states of Alabama and Mississippi by annual stocking of advanced striped bass fingerlings.

New Jersey 3-332-R — Thomas McCloy — F- 42,300 S- 42,300

Inventory of New Jersey's estuarine shellfish resources - Inventory estuarine shellfish resource and monitor annual recruitment of hard clams and oysters, evaluate efficacy of hard clam relay program.

New York 3-355-D — Stephen A. Hendrickson — F- 52,000 S- 52,000

Shellfish resource promotion - Transplant shellfish from polluted to clean waters for cleansing, introduce sexually mature shellfish to increase reproduction potential, and control grow-out and release of sub-legal size shellfish into selected New York waters for future harvesting.

New York 3-356-R — Richard E. Fox — F- 13,140 S- 13,140

Assessment of New York's shellfish resources II - Provide shellfish population density and distribution information and descriptions of shellfish industry participation to serve the needs of State and local government resource managers.

New York 3-360-D — John Hofmann — F- 28,000 S- 28,000

Shellfish sanitation control utilizing mobile laboratories III - Utilize mobile laboratories to maintain sanitary suveillance of shellfish harvest areas and processors.

Texas 2-385-R — Terry J. Cody — Completed 1983

Texas commercial fisheries management program - Determine the status of shrimp populations in Texas bays to assist the Texas Legislature in formulating shrimping regulations. Monitor sampling stations to determine trends in shrimp relative abundance and size. Recommend opening and closing seasons. Determine flexible seasons for the harvest of white shrimp in bays and the Gulf of Mexico as an alternative for the current fixed seasons. Prepare an annual report (assessment) of study results and management recommendations.

Washington 1-168-R — Dennis Tufts — F- 5,639 S- 1,880

South coast marine fish/shellfish monitoring - Collect landings and biological data on groundfish, shrimp, and clams for improved resource management.

West Virginia 3-380-R — Donald J. Orth — F- 19,500 S- 9,453

Investigation of commercial invertebrate bait harvest in the New River, West Virginia - Determine the extent and nature of commercial bait harvesting of crayfish in the New River and evaluate impacts of the present and anticipated commercial harvest on sport fish populations.

Hawaii 4-64-D — Henry M. Sakuda — F-31,000 S-31,000

Commercial Fishery Statistics - The project will allow the State of Hawaii to compile and distribute current information on the Hawaiian commercial fisheries for stock assessment and monitoring purposes.

## STATISTICS

Kansas 2-389-R — Jim Stephens — F- 20,000 S- 6,667

Kansas commercial fisheries statistics - Determine the annual commercial harvest or production and value of species resulting from both the wild fishery and aquaculture industries.

Kansas 2-401-R — Jim Stephens — F- 20,000 S- 6,667

Kansas Marketable Fisheries Investigation - Collect and report aquatic statistics on an annual basis. Determine and apply approaches necessary for management recommendations. Provide scientific informational base to manage commercial aquatic resources. Prepare report of marketable investigation.

Maryland 3-345-D — John B. Williams — F- 74,834 S- 286,079

Maryland fisheries statistics - Maintain a comprehensive catch reporting system for Maryland commercial fisheries.

Massachusetts 3-371-D — Charles O. Anderson, Jr. — F- 78,245 S- 35,154

Collection, compilation, evaluation, and dissemination of Massachusetts fishery statistics - Collect and analyze commercial fisheries landings data, and establish an EDP center to assist in program evaluation.

Missouri 2-363-R — John W. Robinson — F- 20,000 S- 6,666

Research and management of Missouri's commercial fisheries resources - Determine the number of commercial fishermen, pounds of fish harvested, and the wholesale value for Missouri's River commercial fisheries. Project I: Missouri's commercial fishery harvest - To determine the number of commercial fishermen, pounds of fish harvested, and the wholesale value for Missouri's river commercial fisheries. Project II: Maintenance, enhancement, and evaluation of commercial fisheries habitat created in the Missouri and Mississippi River through agency coordination - To preserve and enhance Missouri's commercial fisheries by motivating the various construction agencies to preserve and restore fish habitat in future and on-going projects and to assist in evaluating these efforts. Project III: The development of a qualitative system to evaluate Missouri's commercial fish populations - To select population parameters and establish acceptable levels of each which would provide a qualitative method of assessing the status of important commercial fish species populations such as carp, buffalo, sp., catfish sp., and freshwater drum in the Missouri River and to determine the most effective sampling methods and techniques to obtain a representative sample for assessing those populations.

Nebraska 2-359-R — Larry A. Witt — F- 2,250 S- 750

Population estimates of Missouri River fishes - Use mark-recapture data to estimate populations.

Nebraska 2-360-R — Monte Madsen — F- 8,302 S- 2,767

Inland commercial fisheries investigations - Monitor activities of the commercial fishermen and collect data from harvested species.

New Hampshire 3-343-D — Leigh R. Welcome — Completed 1983

Statistical data acquisition for the marine fisheries of New Hampshire - Develop and implement a catch and effort statistical collection system for the finfish and lobster commercial fisheries of New Hampshire.

New Hampshire 3-381-D — Leigh R. Welcome — F- 50,497 S- 16,832

Statistical data acquisition program for the marine fisheries of New Hampshire - Collect catch and effort data for the New Hampshire lobster and finfish commercial fisheries essential for the development of appropriate fishery management measures.

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| Northern Marianas 4-61-D | Nicolas Guerrero | Completed 1983 |

Fisheries data collection program - Development of data collection system for Northern Marianas fisheries.

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| Northern Marianas 4-66-D | Nicolas Guerrero | F- 14,000<br>S- 4,667 |

Fisheries data collection program II - Implementation of the CNMI data collection system.

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| Trust Territory 4-54-D | Toshiro Paulis | Completed 1983 |

Palau reef fish production - Development of baseline information on Palau's fisheries.

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| Virginia 3-361-D | Paul J. Anninos | F-115,990<br>S- 38,663 |

Commercial finfishery and shellfishery statistical collection - Continue efforts in the collection of Virginia's commercial finfish and shellfish catch statistics and harvestor employment information.

# REGIONAL HIGHLIGHTS

The Grant-in-Aid for Fisheries programs (P.L. 88-309, P.L. 89-304) have, since their inception, provided financial assistance to the States and territories for purposes of developing and enhancing the commercial and anadromous fisheries of the United States. Most of the funds have been used for acquiring resource and fisheries information needed for management decision-making. Prior to 1976, the funds were directed almost exclusively at the management of intra-and interstate fisheries. Since the passage of the Magnuson Fishery Conservation and Management Act of 1976, however, the percentage of the Federal funds directed at cooperative State-Federal management of fisheries which fall under the purview of that act has increased to approximately 60 percent. The following regional highlights describe the contributions these programs make to the management of the commercial and anadromous fisheries of the United States.

## NORTHEAST REGION

The following summary addresses the recent study accomplishments and status of four research projects funded under the Grant-In-Aid Program in the Northeast Region. These projects have been selected to signify some of the myriad contributions and benefits of work being conducted under P.L. 88-309 and P.L. 89-304 to the management and conservation of the region's commercial and anadromous fishery resources.

The lobster fishery in Maine is ranked first in terms of dollar value ($44.4 million in 1981) and second in weight landed (22.6 million pounds) of all the commercial fishery species harvested in the state. The Department of Marine Resources, since 1965, has utilized P.L. 88-309 funds to accommodate research priorities pertaining to this valuable resource and develop the biological and socio-economic data base essential for the formulation of appropriate management strategies. Current project emphasis is being directed toward determination of stock-recruitment relationships, evaluation of population mortality parameters, and characterization of the commercial landings. In 1983, project personnel published a fifteen-year (1967-1981) summary report concerning catch and effort information relative to the Maine commercial lobster industry, which has significant importance to lobster researchers and fishery managers in both the United States and Canada. Also, project results have provided substantial input into the development of a Fishery Management Plan for American lobster prepared by the New England Fishery Management Council under the auspices of the Magnuson Fishery Conservation and Management Act of 1976.

Under P.L. 89-304, the New York State Division of Marine Resources has conducted investigations since 1973 on striped bass movements, migration, population structure, survival, and annual indices of juvenile abundance in the Hudson River. For this species, the annual value of the state's commercial (ex-vessel dollar amount based upon 1981 reported landings) and recreational (extrapolated from the 1979 Marine Recreational Fishery Survey) fisheries were estimated at $1.4 and $3.1 million, respectively. The study, which complements similar work being performed by other Northeast and Southeast regional states under the emergency striped bass provisions (Section 7) of the Anadromous Fish Conservation Act, assures the continuity of a long-term data base with which to help assess the effectiveness of recently enacted management measures adopted by several Atlantic coastal states in response to an overall decline in striped bass abundance. The project also provides critical information for monitoring the status of the Hudson River stock, a research priority identified by the Interstate Fisheries Management Plan. Ongoing and anticipated project objectives include the characterization of the recreational and Long Island commercial net fisheries, continuation of the young-of-the-year abundance survey, and estimation of the Hudson River spawning stock contribution to the coastal regional landings.

In 1983, a final report was completed for a P.L. 88-309 study on the management of mussel (unionid mollusks) populations in southeastern Ohio's Muskingum River, which has long been recognized as a major producer of freshwater mussels. This project, subcontracted by the Ohio

Department of Natural Resources to the Ohio State University, evaluated the current status of a potential commercial resource which, under favorable environmental conditions, could annually produce 1,000 tons of shells presently valued at $600,000 to the cultured pearl industry. The primary objective of the study was to ascertain the degree to which unionid populations in this watershed had recovered from adverse resource conditions inflicted by industrial pollution in the early 1970's, which subsequently forced a complete suspension of commercial harvest operations in 1974. An extensive faunistic survey conducted during 1979-1981 produced a total of 38 existing (fresh shells) and 10 recent/historic (weathered or subfossil shells) taxa, compared to the 63 taxa of record. Several of the historic beds were found to no longer exist. Those areas which were determined to have potential commercial value were intensively sampled to evaluate species composition, density, and recruitment. From this study, recommendations were made concerning the retention of resource sanctuaries, commercial fishing methods, and season/size harvesting restrictions.

In Virginia, commercial landings of American shad and river herring (alosids) have drastically diminished in comparison to historical levels (e.g. for shad, 4,990 metric tons in 1896 vs. an estimated 200 metric tons in 1981) and have continued to show a general decline during the last decade. A concern over the decreased abundance of east coast alosid stocks, particularly in and south of the Chesapeake Bay region, was expressed by state and federal fishery scientists and administrators at a 1982 workshop held by the Atlantic States Marine Fisheries Commission. During this meeting, an Action Plan for shad and river herring was unanimously adopted under the auspices of the Interstate Fisheries Management Program. Continuation of activities conducted under P.L. 89-304 by the Virginia Institute of Marine Science is responding to several of the research concerns identified in this Action Plan. Specifically, project personnel collect and compile data regarding commercial catch statistics, monitor annual indices of juvenile abundance, and estimate the survival parameters and year class strength of Virginia's alosid stocks. This information, along with that resulting from similar P.L. 89-304 studies in Connecticut, Maryland, and Maine, will provide a valuable contribution to the total data base that will be necessary to assist in the formulation of appropriate management strategies for the east coast Alosa stocks.

As made evident by these representative studies, the nature of the work performed under the Grant-In-Aid Program has increasingly become dependent upon close coordination and communications between state and federal agencies, educational institutions, the commercial and recreational fishing industries, and other interests in the public and private sectors. A continuing commitment of the Northeast Region is to promote, whenever possible, an enhanced awareness and visibility of program accomplishments which are of mutual benefit to both the marine and inland fishery sciences.

## SOUTHEAST REGION

The 17 states, the Commonwealth of Puerto Rico and the U.S. Virgin Islands that constitute the Southeast Region represent a great diversity of fishery populations. This Region is one of the greatest producers of commercial and recreational fishery resources for the benefit of the nation. In 1983, the Southeast Region continued to maintain abundant commercial fishery resources for the benefit of users. The $1.8 million in P.L. 88-309 and P.L. 89-304 allocated to the states of the Southeast Region were expended to support the management of marine and freshwater fishery resources valued at over $2.5 billion.

The inland states continued P.L. 88-309 projects for the enhancement and management of stream and reservoir commercial fisheries. Kentucky, Nebraska, Missouri, Arkansas, Oklahoma and Kansas monitored commercial fisheries in streams and/or reservoirs to identify and implement commercial fisheries management measures. New Mexico tested methods for mass-harvesting for

commercial species from small reservoirs. Iowa, Nebraska and Missouri tested and implemented new methods for monitoring the status of Mississippi and Missouri Rivers commercial fisheries. Tennessee determined the distribution and abundance of important shellfish resources. Nebraska began a test of a new method to optimize the commercial harvest of reservoir fishes.

The ten coastal states continued to develop a data base for the management of their important marine fisheries. The information accumulated from P.L. 88-309-sponsored projects not only supported the management of commercial fisheries in the state's territorial waters; but, the information was also important in developing, implementing and evaluating fishery management plans of the South Atlantic, the Caribbean, and Gulf of Mexico Fishery Management Councils. The Gulf of Mexico states utilized P.L. 88-309 projects to monitor the ecology of king mackeral, spiny lobster, stone crab, shrimp and other finfish. The Gulf states also intensified the State/Federal Cooperative program with the Southeast Center, National Marine Fisheries Service, for the development of a Gulf-wide Area Monitoring and Assessment Program (SEAMAP). The 1983 focus has continued the monitoring of Penaeid shrimp to support the management of this valuable fishery throughout the Gulf of Mexico.

The South Atlantic states continue fishery resource monitoring activities in support of the Territorial Sea and U.S. Fishery Conservation Zone fishery program. Georgia is conducting research and assessment of shrimp and finfish. North Carolina implemented flounder and Atlantic croaker tagging life history investigation and continues finfish assessment work. South Carolina initiated a biological assessment of the knobbed whelk fishery. All of these P.L. 88-309 activities are adding important data for the management of interjurisdictional fisheries of the Territorial Sea and U.S. Fishery Conservation Zone.

The U.S. Virgin Islands and the Commonwealth of Puerto Rico continue to gather information on reef fisheries. Spiny lobster, finfish and shellfish fisheries were monitored to provide data for management in conjunction with the Caribbean Fishery Management Council. Both Puerto Rico and the U.S. Virgin Islands conduct programs to determine the weight and value of commercial fisheries landings.

Alabama, Mississippi, South Carolina, North Carolina and Auburn (Alabama) University participated in the Anadromous Fish Conservation program (P.L. 89-304) in 1983. Alabama and Mississippi entered into a cooperative striped bass program with NMFS and the U.S. Fish and Wildlife Service to restore coastal striped bass populations to their historic levels. Populations of striped bass are now becoming abundant and a recreational fishery for "stripers" has developed in both states. North Carolina and South Carolina continue to monitor anadromous fisheries to determine their status, harvest and abundance. These data provide a basis for state and interjurisdictional fishery management programs for anadromous fisheries in the Southeast Region.

## NORTHWEST REGION

In FY83, the nine states comprising the Northwest Region received $375,000 under the Commercial Fisheries Research and Development Act (P.L. 88-309) and $1,181,550 under the Anadromous Fish Conservation Act (P.L. 89-304). One-third of the Regional P.L. 88-309 allocation supported projects for the fisheries agencies of the seven inland states, Colorado, Idaho, Montana, North Dakota, South Dakota, Utah and Wyoming. The balance of appropriated funds supported Oregon and Washington projects vital to the management of the major commercial ocean fisheries of the Northwest - salmon, groundfish, pink shrimp and Dungeness crab.

P.L. 88-309 supported programs on the inland waters in FY83 were evenly divided between those contributing to improved harvest management strategies in large mainstem reservoirs, and those contributing information needed to develop or maintain successful fish culture efforts. Due to the uncertainties of funding, few new, multiyear projects were initiated in 1983.

Reservoir stock assessment studies which served to refine and update the existing data base on buffalo fish, goldeye, suckers and carp were continued in Montana and Wyoming. South Dakota conducted further studies on the abundance and distribution of rainbow smelt populations using hydroacoustic survey methods. Trout culture techniques and an outbreak of proliferative kidney disease were subjects of study in Utah and Idaho, respectively. In the latter study PKD was found in three populations of trout commercially raised in the Hagerman Valley. Because of the potentially large host range of the causative agent, fish-to-fish transmission studies have been given high priority in future work.

Seventy-two percent of P.L. 88-309 funds provided to Washington and Oregon were utilized in regional pink shrimp and groundfish stock assessment studies, and for catch data collection. A Pink Shrimp Management Plan developed by the Pacific Fishery Management Council (PFMC) now serves as the basis for coastwide management of the shrimp fishery through a multistate cooperative effort. The PFMC Groundfish Management Plan has been in effect coastwide since late 1982. Sampling and biological data collection activities are required for the continual updating of the data base for both pink shrimp and groundfish, and receive major support from P.L. 88-309 funds.

The remainder of "309" funds available to the coastal states (28%) was utilized in projects responsive to specific state management needs. Washington continued monitoring the condition of Dungeness crab for regulation of the crab fishery. Oregon developed a population, catch and harvest gear information retrieval and analysis system for the weathervane scallop which is updated through a continuing logbook program. Data collected was used to alleviate gear conflicts between crab and scallop harvesters. Distribution data collected in this program was used by the Corps of Engineers to reduce the impact of dredge disposal near the mouth of Coos Bay. Shellfish data collected in previous years' programs supported in part by CFRD funds continues to be useful. A substantial data base on Oregon subtidal clam populations in Tillamook and Coos Bays contributed significantly to an EPA study of water quality in these areas, and was used by coastal resource agencies and county planners to establish shellfish harvesting guidelines.

Historically, the Pacific Salmon fishery is the largest, most complex and controversial fishery in the Northwest. Problems are caused by dwindling coho and chinook stocks, a highly mobile and overcapitalized commercial fishing fleet, treaty obligations, and the necessary interaction of a myriad of state, Federal, and Tribal management entities. The ocean fishery has been regulated and coordinated under a Pacific Fishery Management Council FMP amendment since 1978. Management of mixed stocks, some of which are more depleted than others, requires continuous monitoring of the catch to meet escapement and allocation goals. As data needs have become more critical, P.L. 89-304 program emphasis has moved sharply away from enhancement techniques and basic research.

In 1983, 5% of the Region's P.L. 89-304 funds were applied to research on hatchery techniques in the coastal states. Fourteen per cent of the funds available were utilized in monitoring the natural and artificial production of chinook and coho in Oregon and Washington coastal streams, 20% of the funds were used to conduct spawning surveys for escapement estimates, and the balance, 61%, was utilized for coded wire tagging, sampling of the ocean recreational and commercial fisheries, recovery and processing of tags and data entry in agency computers. Operation of the Pacific Marine Fishery Commission's Regional Mark Processing Center (RMPC) is accomplished with P.L. 89-304 funds. The RMPC compiles CWT data collected coastwide and distributes the CWT and Mark list to users from California to Alaska. Thus the region's 304 program makes a very significant contribution of essential information for in-season and between-season management decisions by the Pacific Fishery Management Council, and the state fisheries agencies.

## SOUTHWEST REGION

In November of 1983, the Palau Reef Fish Production Study was completed, an important beginning for managing Palau's fishery resources. The purpose of the project was to collect and analyze available records of fish purchases from 1976 through 1981 and to design and implement a permanent data collection system to monitor future harvests. Information on quantity, value, and size distribution of the fishery resources in Palau now is being collected. The project was completed with the help of the Southwest Fisheries Center, Honolulu Laboratory.

A similar data collection project was completed in the Commonwealth of the Northern Mariana Islands, and a second phase to the project was approved for 1984. Two survey instruments were developed in the Marianas project, a fishing log book for commercial fishermen and a sales data form for documenting commercial sales in the markets. The Commonwealth now is getting a more accurate picture of species composition, species seasonality, as well as cost and earnings statistics for the commercial fishery in the area.

The fisheries upon which the western Pacific island areas depend are small in quantity and value when compared to most fisheries of the continental United States; however, the importance of fish to the individual in many of these areas is large. Palau made a preliminary estimate that the average consumption of fish per individual was .85 pounds per day. As a result, effective management of the local resources is critical and the development of an information collection system in the two areas is an essential first step.

Data collection methods must be tailored to conditions in each area, but an exchange of data between areas also is important. Although the regional grant program has provided funding for the two projects, the Honolulu Laboratory has provided the expertise needed to incorporate fisheries data into the Western Pacific Fishery Information Network, the system designed for the access and exchange of computerized fisheries data bases.

In 1983, the Southwest Region grant program also provided funds to the Arizona Game and Fish Department for the completion of a fish disease diagnostic laboratory. The U.S. Fish and Wildlife Service, which provided diagnostic services to public and private hatcheries in the past, closed its laboratory in 1983 and no private laboratory exists in the State. Under State law the Department is responsible for disease inspection of all private fish facilities. The new laboratory will enable the State to maintain control of disease problems in the State by providing services to public and private hatcheries, as well as permit efficient inspection of fish imported into the State. The laboratory also will enable the State to initiate research on some of the persistent disease problems in State waters.

## ALASKA REGION

In FY 1983, the Alaska Region received $502,850 under the Anadromous Fish Conservation Act (P.L. 89-304) and $240,000 under the Commercial Fisheries Research and Development Act (P.L. 89-309). The Region apportioned $472,800 of P.L. 89-304 money to the Alaska Department of Fish and Game (ADF&G) and $30,000 to the University of Washington's Fishery Research Institute for research projects directed at the management of certain segments of Alaska's commercial fisheries. These segments, which include fisheries for sockeye, pink, chum, and coho salmon, and Pacific herring in Southeast Alaska, sockeye salmon in the Alaska Pennisula, groundfish in the Bering Sea and Gulf of Alaska, and Pacific herring in the Bering Sea, had a total 1983 value to the fishermen that is likely to exceed $100 million.

Four of these projects are contributing to the data base required by the Magnuson Fishery Conservation and Management Act (MFCMA) for the development and maintenance of fishery management plans by the North Pacific Fishery Management Council (Council) and for inseason

management actions authorized by the plans. Two of the P.L. 89-304 projects are directed at tagging coho salmon from Southeast Alaska and the recovery of tags from coho and chinook salmon that were tagged in Alaska, British Columbia, Washington, Oregon, and California. Data thus obtained from these projects are providing better understanding of migration routes, run timing, magnitude of returns, and relative contributions of stocks from these states and British Columbia.

Two P.L. 88-309 projects have been directed at the collection and analysis of U.S. catch and effort data from groundfish fisheries in the Gulf of Alaska and the Bering Sea and from a Pacific herring fishery in the Bering Sea. Data from the fisheries are used to determine U.S. catches and current stock conditions. Inseason management decisions by NMFS and ADF&G are based on these determinations. Data from the groundfish fisheries contribute directly to maintenance of fishery management plans. Data from the herring fishery contributed to development of a fishery management plan, that was adopted by the Council in 1983, to manage an offshore herring fishery.

# ADMINISTRATIVE ORGANIZATIONS

## NON FEDERAL COOPERATORS

| State | Agency | Address |
|---|---|---|
| Alabama | Department of Conservation and Natural Resources | State Administration Building<br>64 North Union Street<br>Montgomery 36130 |
| | Auburn University, Fisheries Department | Swingle Hall<br>Auburn 36830 |
| American Samoa | Office of Marine Resources<br>Government of American Samoa | Pago Pago 96799 |
| Alaska | Department of Fish & Game | Box 3-2000<br>Juneau 99802 |
| Arizona | Game and Fish Department | 2222 West Greenway<br>Phoenix, 85023 |
| Arkansas | Game and Fish Commission | 2 Natural Resources Drive<br>Markham & I-430<br>Little Rock 72205 |
| California | Department of Fish & Game<br>The Resources Agency | 1416 Ninth Street<br>Sacramento 95814 |
| Colorado | Division of Wildlife<br>Department of Natural Resources | 6060 Broadway<br>Denver 80216 |
| Connecticut | Preservation & Conservation<br>Division, Department of<br>Environmental Protection | State Office Building<br>165 Capitol Avenue<br>Hartford 06115 |
| Delaware | Division of Fish and Wildlife<br>Department of Natural<br>Resources & Environmental<br>Control | P.O. Box 1401<br>Dover 19901 |
| Florida | Department of Natural Resources | 3900 Commonwealth<br>Boulevard<br>Tallahassee 32303 |
| Georgia | Department of Natural Resources | Trinity-Washington Building<br>270 Washington Street, SW<br>Atlanta 30334 |
| Guam | Government of Guam | Agana 96921 |
| Hawaii | Division of Fish & Game<br>Department of Land & Natural<br>Resources | 1151 Punchbowl Street<br>Honolulu 96813 |

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|---|---|---|
| Idaho | Department of Fish & Game | 600 South Walnut,<br>Box 25<br>Boise 83707 |
| Illinois | Department of Conservation | 605 Wm. Stratton Building<br>400 S. Spring Street<br>Springfield 62706 |
| Indiana | Division of Fish & Wildlife<br>Department of Natural<br>Resources | 607 State Office Building<br>Indianapolis 46204 |
| Iowa | State Conservation Commission | Wallace State Office<br>Building<br>9th and Grand<br>Des Moines 50319 |
| Kansas | Fish and Game Commission | Box 54A Rural Route 2<br>Pratt 67124 |
| Kentucky | Department of Fish & Wildlife<br>Resources | 592 East Main Street<br>Frankfort 40601 |
| Louisiana | Department of Wildlife and Fisheries | P.O. Box 15570<br>Baton Rouge 70895 |
| Maine | Department of Marine Resources | State House, Station 21<br>Augusta 04333 |
| Northern Mariana<br>Islands | Division of Marine Resources | Office of the Governor<br>Saipan 96950 |
| Maryland | Tidewater Administration<br>Department of Natural Resources | Tawes State Office Building<br>Annapolis 21401 |
| Massachusetts | Division of Marine Fisheries<br>Department of Fisheries, Wildlife,<br>and Recreational Vechicles | Leverett Saltonstall<br>Building<br>100 Cambridge Street<br>Boston 02202 |
| Michigan | Department of Natural Resources | Box 30028<br>Lansing 48909 |
| Minnesota | Division of Fish and Wildlife<br>Department of Natural Resources | 300 Centennial Building<br>St. Paul 55155 |
| Mississippi | Department of Wildlife<br>Conservation | Box 451<br>Jackson 39205 |
| Missouri | Department of Conservation | P.O. Box 180<br>Jefferson City 65101 |
| Montana | Department of Fish, Game<br>and Parks | 1420 E. Sixth Avenue<br>Helena 59601 |
| Nebraska | Game and Parks Commission | Box 30370<br>2200 North 33rd Street<br>Lincoln 68503 |

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| Nevada | Department of Fish and Game | Box 10678<br>Reno 89520 |
| New Hampshire | Fish and Game Department | 34 Bridge Street<br>Concord 03301 |
| New Jersey | Division of Fish, Game & Wildlife, Department of Environmental Protection | CN-400<br>Trenton 08625 |
| New Mexico | Department of Game and Fish | State Capitol Building<br>Sante Fe 87501 |
| New York | Division of Marine Resources | Building 40, State<br>University of New York<br>Stony Brook 11794 |
| North Carolina | Division of Marine Fisheries<br>Department of Natural Resources and Community Development | Box 769<br>Morehead City 28557 |
| North Dakota | State Game and Fish Department | 2121 Lovett Street<br>Bismarck 58501 |
| Ohio | Division of Wildlife<br>Department of Natural Resources | Fountain Square<br>Columbus 43224 |
| Oklahoma | Department of Wildlife Conservation | 1801 North Lincoln<br>Oklahoma City 73152 |
| Oregon | Department of Fish and Wildlife | 506 SW Mill Street<br>Portland 97208 |
| | Pacific Salmon Inter-agency Council | 741 State Office Building<br>Portland 97201 |
| | Oregon State University | Corvallis 97331 |
| Pennsylvania | Fish Commission | P.O. Box 1673<br>Harrisburg 17120 |
| Puerto Rico | Marine Resources Development Corporation | P.O. Box 2629<br>Old San Juan Station 00903 |
| Rhode Island | Division of Fish and Wildlife<br>Department of Environmental Management | Washington County<br>Government Center<br>Tower Hill Road<br>Wakefield 02879 |
| South Carolina | Wildlife and Marine Resources Department | P.O. Box 167<br>Columbia 29202 |
| South Dakota | Department of Game, Fish and Parks | Sigurd Anderson Building<br>445 East Capitol<br>Pierre 57501 |

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| Tennessee | Wildlife Resources Agency | P.O. Box 40747<br>Ellington Agricultural Center<br>Nashville 37204 |
| Texas | Parks and Wildlife Department<br>Coastal Fisheries Branch | 4200 Smith School Road<br>Austin 78744 |
| Utah | Division of Wildlife Resources<br>State Department of Natural Resources | 1596 West North Temple<br>Salt Lake City 84116 |
| Vermont | Fish and Game Department | 5 Court Street<br>Montpelier 05602 |
| Virgin Islands | Department of Conservation and Cultural Affairs | Governor of the Virgin Islands<br>St. Thomas 00801 |
| Virginia | Marine Resources Commission | P.O. Box 756<br>2401 West Avenue<br>Newport News 23607 |
| | Institute of Marine Science | Gloucester Point 23062 |
| Washington | Department of Fisheries | Room 115<br>General Administration Bldg.<br>Olympia 98504 |
| | Northwest Indian Fisheries Commission | 2625 Parkmont Lane SW<br>Olympia 98502 |
| West Virginia | Department of Natural Resources | 1800 Washington Street, East<br>Charleston 25305 |
| Wisconsin | Department of Natural Resources | Box 7921<br>Madison 53707 |
| Wyoming | Game and Fish Department | Box 1589<br>Cheyenne 82001 |

# NATIONAL MARINE FISHERIES SERVICE

## Northeast Region

Connecticut
Delaware
Illinois
Indiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
New Hampshire
New Jersey
New York
Ohio
Pennsylvania
Rhode Island
Vermont
Virginia
West Virginia
Wisconsin

Richard Schaefer, Acting Director
John E. Cookson, Chief, State/Federal Relations Branch
Federal Building
14 Elm Street
Gloucester, Massachusetts 01930
Phone: 617-281-3600

## Southeast Region

Alabama
Arkansas
Florida
Georgia
Iowa
Kansas
Kentucky
Louisiana
Mississippi
Missouri
Nebraska
New Mexico
North Carolina
Oklahoma
Puerto Rico
South Carolina
Tennessee
Texas
Virgin Islands

Jack Brawner, Regional Director
L.B. Byrd, Chief, State/Federal and Grants Branch
Duval Building
9450 Koger Boulevard
St. Petersburg, Florida 33702
Phone: 813-893-3161

## Northwest Region

Colorado
Idaho
Montana
North Dakota
Oregon
South Dakota
Utah
Washington
Wyoming

Thomas E. Kruse, Acting Director
Nancie Bell, Federal Aid Coordinator
7600 Sand Point Way N.E. BIN 015700
Seattle, Washington 98115
Phone: 206-526-6146

## Southwest Region

American Samoa
Arizona
California
Guam
Hawaii
Nevada
Trust Territory of the Pacific Islands
Northern Marianas

E. Charles Fullerton, Director
James Morgan, Resource Management Branch
300 South Ferry Street
Terminal Island, California 90731
Phone: 213-548-2518

## Alaska Region

Alaska

Robert W. McVey, Regional Director
Ron Berg, Fisheries Management Division
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# PUBLICATIONS

In carrying out project activities about 300 State scientists are continously employed to gather information for better management of the fishery resources and to solve fishery problems. These studies have resulted in 673 publications, of which 579 have appeared in scientific journals and 94 have been for partial fulfillment of the requirement for advanced degrees from educational institutions. The literature citations list the project numbers in parentheses.

Some of the reports are available from the National Technical Information Service (NTIS). NTIS sells these reports as either paper or microfiche copies. Its address is:

National Technical Information Service
U.S. Department of Commerce
Springfield, VA 22151


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